*TM 10-7360-230-13&P

TECHNICAL MANUAL

OPERATOR AND FIELD MAINTENANCE MANUAL
INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST
FOR

KITCHEN MODULE (ASSAULT KITCHEN)
NSN 7360-01-558-3100

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HEADQUARTERS, DEPARTMENT OF THE ARMY

20 DECEMBER 2014

WARNING SUMMARY

This warning summary contains general safety warnings and hazardous materials warnings that must be understood and applied during operation and maintenance of this equipment. Failure to observe these precautions could result in serious injury or death to personnel. Also included are explanations of safety and hazardous materials icons used within the technical manual.

FIRST AID

For first aid treatment, refer to FM 4-25.11.

EXPLANATION OF SAFETY WARNING ICONS

ELECTRICAL - electrical wire to arm with electricity symbol running through human body shows that shock hazard is present.

HEAVY OBJECT - human figure stooping over heavy object shows physical injury potential from improper lifting technique.

HOT AREA - hand over object radiating heat shows that part is hot and can burn.

MOVING PARTS - human figure with an arm caught between gears shows that the moving parts of the equipment present a danger to life or limb.

GENERAL SAFETY WARNING DESCRIPTIONS

WARNING

Gasoline should NOT be used with the TRH or MBU under any circumstance. Only JP-8 or an approved alternate diesel fuel may be used. Using gasoline in the TRH or MBU will create a fire danger and potential for explosion. Failure to observe safety precautions may result in injury or death to personnel.

GENERAL SAFETY WARNING DESCRIPTIONS – CONTINUED

WARNING

Never attempt to heat cooking or frying oil of any kind in the TRH. The TRH should only be used to heat water in accordance with the operating instructions outlined in this manual. Using oil in the TRH will create a fire danger. Failure to observe warnings may result in injury or death to personnel.

Do not attempt to connect a fuel line to the TRH or MBU in the vicinity of any open flame. Ensure that the fuel hose connections are made properly to avoid fuel spillage. Prevent a possible fire hazard by having absorbent materials or fuel mats on hand to absorb any spillage. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

Electrical high voltage cannot be seen but it can kill you, render you unconscious, or severely burn you. Electricity is unlike most other dangerous things you can come in contact with because it gives no warning and no symptoms to be wary of. To ensure your safety and that of other maintenance personnel, always disconnect equipment from external power before attempting maintenance tasks.

WARNING

Prior to performing maintenance on any Assault Kitchen components, personnel will remove all watches, rings, and jewelry. Failure to do so could result in serious personal injury or death.

WARNING

Do not attempt service procedures on a TRH burner or MBU that has recently been in operation. Let the burner cool down before performing these procedures. Failure to observe safety precautions may result in injury or death to personnel.

GENERAL SAFETY WARNING DESCRIPTIONS – CONTINUED

WARNING

HIGH VOLTAGE is used in the operation of this equipment. **DEATH ON CONTACT** may result if personnel fail to observe safety precautions. Never work on electrical equipment unless there is at least one other person nearby who is familiar with the operation and hazards of the equipment. That person should also be competent in giving first aid. Ask maintenance personnel about any hazardous features of the TRH or MBU prior to doing any maintenance. Whenever possible, external power must be shut off before performing any maintenance. Be careful not to contact high-voltage connections when removing, installing or operating this equipment. Whenever possible, keep one hand away from the equipment to reduce the hazard of current flowing through vital organs of the body. Voltages as low as 50 volts may cause death.

For artificial respiration, refer to FM 21-11.

Do not stand in water while handling live power cords or electrical shock may result. Position all power cables so that they are out of the way during operation and are not in water.

WARNING

The MBU weighs approximately 58 pounds fully fueled (26.3 kg). Two persons must carry the MBU, lifting with legs, not back, to prevent injury.

The TRH Lid weighs approximately 45 pounds. When performing maintenance on the TRH lid two persons must carry the lid, lifting with legs, not back, to prevent injury.

The TRH weighs approximately 320 pounds when empty and 525 pounds when full. Proper lifting technique is required to prevent damage to equipment and personnel. Always drain water tank before lifting or moving TRH. Use a forklift or other material handling equipment to place or remove the TRH on the back of a HMMWV or trailer. If no lifting equipment is available 6 persons must be used to move the TRH, lifting with legs, not back, to prevent injury. Do not use the lid handles to move the TRH. If using personnel to move the TRH, use the two lift bars on the TRH.

WARNING

Do not turn TRH power on until heater tank is filled with water above the low water sensor.

GENERAL SAFETY WARNING DESCRIPTIONS – CONTINUED

WARNING

Tank water may be scalding and could cause serious injury. Remain clear of drain pipe or drain hose when draining hot water.

Always use the exhaust deflector to direct hot exhaust away from personnel and equipment. Do not touch the TRH exhaust deflector, as it may be hot. Failure to observe warnings may result in injury to personnel.

Never use the “BOIL” mode to prepare rations as it bypasses built in safety features and may cause personnel to be burned by vented steam or scalding can contents. Never leave the TRH unattended when operating in the “BOIL” mode. Water may “boil over” causing injury to personnel.

Use the TRH “BOIL” mode only for short periods of time. Extended use of the “BOIL” mode produces excessive steam through the pressure relief hole in the TRH lid. Excessive pressure also may accumulate in canned food containers. Failure to observe warnings may result in injury to personnel.

WARNING

Before resetting the power inverter circuit breaker, make sure the TRH red, pull-on/push-off switch is in the OFF position. This will prevent inadvertent burner ignition.

Before removing the TRH Burner from the TRH, ensure the TRH Red, Pull-ON/Push-OFF switch is in the OFF position and the TRH electrical control box is unplugged from power source to prevent electrical shock and inadvertent burner ignition.

WARNING

Keep the TRH tank lid closed whenever possible to prevent contamination and accidental burning. Failure to observe warnings may result in injury to personnel.

#10 Cans become pressurized, to prevent injury punch a hole in the center of the can lid prior to opening with the can opener.

GENERAL SAFETY WARNING DESCRIPTIONS – CONTINUED

WARNING

Keep face and hands away from TRH or wear eye protection when performing maintenance on the fuel system. Substances may spray or splatter during maintenance actions causing injury to personnel.

WARNING

The tray rack and heated tray rations are hot. Wear protective gloves when handling hot tray packs, #10 cans, and UGR rations. Exercise care when opening the lid of the tray ration heater. Placing hands into water, even when protected with gloves, could result in injury to personnel.

When using the diagnostic test box to test the TRH Burner, be careful to observe the condition of the test switches on the test box. All switches shall be in the OFF (O) position. Failure to observe this warning may cause unexpected TRH burner start-up resulting in injury or death to personnel.

DO NOT touch hot metal surfaces with bare hands. Allow surfaces to cool or wear protective gloves when performing maintenance on a hot metal surface. Failure to observe warnings may result in injury or death to personnel.

Be aware that fuel expands as the temperature rises - do not store TRH or fuel cans when full of fuel, where it is exposed to the sun for long periods. Failure to observe warnings may result in injury or death to personnel.

WARNING

Use caution when draining fuel from the TRH Burner. Fuel draining from the TRH Burner fuel sump may flow rapidly. This could cause fuel spatter or spills on skin or clothing. Keep eyes protected and wash any clothing, equipment, or skin that is contaminated by fuel.

During the Ignition Transformer test, it is necessary to look into the TRH Burner flame tube to observe a spark. When observing the flame tube for existence of a spark be sure to stay as far away as possible from the flame tube. Failure to observe this warning may result in injury or death to personnel

EXPLANATION OF HAZARDOUS MATERIAL ICONS

BIOLOGICAL - abstract symbol bug shows that a material may contain bacteria or viruses that present a danger to life or health.

CHEMICAL - drops of liquid on hand shows that the material will cause burns or irritation to human skin or tissue.

EXPLOSION - rapidly expanding symbol shows that the material may explode if subjected to high temperatures, sources of ignition or high pressure.

EYE PROTECTION - person with goggles shows that the material will injure eyes.

FIRE - flame shows that a material may ignite and cause burns.

POISON - skull and crossbones shows that a material is poisonous or is a danger to life.

VAPOR - human figure in a cloud shows that material vapors present a danger to life or health.

GENERAL HAZARDOUS MATERIALS DESCRIPTIONS

WARNING

During operation, the TRH and MBU produce harmful carbon monoxide (CO) and other gases. Carbon monoxide is a colorless, odorless, and tasteless gas. Mild cases of carbon monoxide poisoning can cause symptoms such as nausea, dizziness or headaches. Severe cases of carbon monoxide poisoning can result in brain damage, heart damage or death. Remember that although CO has no telltale odor, it may mix with other odors that mask its presence; therefore, CO can be present within a mix of seemingly harmless odors. To prevent CO poisoning, ensure that the TRH and MBU operating spaces are well ventilated during burner operation. Under no circumstances, should the TRH be operated in any enclosure with all vents closed.

GENERAL HAZARDOUS MATERIALS DESCRIPTIONS - CONTINUED

WARNING

Do not lubricate the hinges of the TRH lid. Failure to observe warnings may result in food contamination and possible injury to personnel.

Ensure the Mercury Tilt Switch is disposed of properly IAW unit SOP and local directives. Mercury is highly toxic to the environment and must be contained to prevent contamination. Do not open, incinerate, or bury the switch.

DESICCANT, ACTIVATED, MIL-D-3464

Activated Desiccant, MIL-D-3464 is primarily a dust irritation hazard to the eyes and respiratory tract. Use safety glasses or goggles and a NIOSH/MSA approved dust mask when handling. For first aid, flush eyes for 15 minutes with clean water and wash skin with soap and water. Consult with local bioenvironmental engineer for disposal of materials and empty containers.

DETERGENT, GENERAL PURPOSE, MIL-D-16791

General Purpose Detergent, MIL-D-16791, is an irritant to the skin and eyes. Rubber or neoprene gloves and eye protection required. Keep off eyes, skin and clothing. Do not ingest. For first aid, flush eyes with plenty of water. If ingested, induce vomiting. Consult with local bioenvironmental engineer for disposal of materials and empty containers.

OIL, PENETRATING, A-A-50493

Penetrating Oil, A-A-50493, is mildly irritating to skin or eyes. Skin and eye protection required. Keep off of eyes, skin and clothing. Do not ingest. For first aid, flush eyes for 15 minutes with water. Wash skin with soap and water. Consult with local bioenvironmental engineer for disposal of materials and empty containers.

GENERAL HAZARDOUS MATERIALS DESCRIPTIONS - CONTINUED

TURBINE FUEL, AVIATION, JP-8 (NATO F-34), MIL-DTL-83133

Turbine Fuel, Aviation, Grades JP-8 (NATO F-34), MIL-DTL-83133, is extremely flammable. Prolonged skin contact may cause dermatitis. Overexposure could cause headache, dizziness, nausea, loss of consciousness, or death. Keep away from heat, sparks and open flames. Gloves and safety glasses/goggles required. Do not ingest. Use in well ventilated area. Keep off of eyes, skin, and clothing. First aid: flush eyes with water for 15 minutes, wash skin with soap and water. If ingested, do not induce vomiting and seek medical attention. Consult with local bioenvironmental engineer for disposal of materials and empty containers

LIST OF EFFECTIVE PAGES/WORK PACKAGES

NOTE: Zero in the "Change No." column indicates an original page or work package.

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TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 44 AND TOTAL NUMBER OF WORK PACKAGES IS 69, CONSISTING OF THE FOLLOWING:

Page / WP No.	Change No.	Page / WP No.	Change No.
Front Cover	0	WP 0038 (4 pgs)	0
Warning (8 pgs)	0	WP 0039 (4 pgs)	0
Title Page and TOC (12 pgs)	0	WP 0040 (6 pgs)	0
How To Use This Manual (2 pgs)	0	WP 0041 (2 pgs)	0
Chp 1 title page	0	WP 0042 (4 pgs)	0
WP 0001 (6 pgs)	0	WP 0043 (32 pgs)	0
WP 0002 (6 pgs)	0	WP 0044 (10 pgs)	0
WP 0003 (4 pgs)	0	WP 0045 (6 pgs)	0
Chp 2 title page	0	WP 0046 (2 pgs)	0
WP 0004 (14 pgs)	0	WP 0047 (2 pgs)	0
WP 0005 (34 pgs)	0	WP 0048 (4 pgs)	0
WP 0006 (8 pgs)	0	WP 0049 (2 pgs)	0
WP 0007 (6 pgs)	0	WP 0050 (8 pgs)	0
Chp 3 title page	0	WP 0051 (2 pgs)	0
WP 0008 (4 pgs)	0	WP 0052 (2 pgs)	0
WP 0009 (18 pgs)	0	WP 0053 (2 pgs)	0
WP 0010 (16 pgs)	0	WP 0054 (2 pgs)	0
WP 0011 (20 pgs)	0	Chp 7 title page	0
Chp 4 title page	0	WP 0055 (6 pgs)	0
WP 0012 (2 pgs)	0	WP 0056 (4 pgs)	0
WP 0013 (6 pgs)	0	WP 0057 (10 pgs)	0
Chp 5 title page	0	WP 0058 (4 pgs)	0
WP 0014 (58 pgs)	0	WP 0059 (4 pgs)	0
WP 0015 (4 pgs)	0	WP 0060 (4 pgs)	0
WP 0016 (4 pgs)	0	WP 0061 (2 pgs)	0
WP 0017 (4 pgs)	0	WP 0062 (4 pgs)	0
WP 0018 (4 pgs)	0	Chp 8 title page	0
WP 0019 (4 pgs)	0	WP 0063 (2 pgs)	0
WP 0020 (2 pgs)	0	WP 0064 (4 pgs)	0
WP 0021 (2 pgs)	0	WP 0065 (4 pgs)	0
WP 0022 (6 pgs)	0	WP 0066 (14 pgs)	0
WP 0023 (2 pgs)	0	WP 0067 (4 pgs)	0
WP 0024 (2 pgs)	0	WP 0068 (2 pgs)	0
WP 0025 (2 pgs)	0	WP 0069 (2 pgs)	0
WP 0026 (10 pgs)	0	INDEX-1 thru INDEX-3 (4 pgs)	0
WP 0027 (2 pgs)	0	Inside back cover	0
WP 0028 (2 pgs)	0	Back Cover	0
WP 0029 (4 pgs)	0		
WP 0030 (10 pgs)	0		
Chp 6 title page	0		
WP 0031 (4 pgs)	0		
WP 0032 (6 pgs)	0		
WP 0033 (4 pgs)	0		
WP 0034 (4 pgs)	0		
WP 0035 (4 pgs)	0		
WP 0036 (4 pgs)	0		
WP 0037 (4 pgs)	0		

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TECHNICAL MANUAL

OPERATOR AND FIELD MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST FOR

KITCHEN MODULE (ASSAULT KITCHEN) NSN 7360-01-558-3100

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

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TABLE OF CONTENTS

WP Sequence No.

Page No.

How To Use This Manual xiii

Chapter 1 – General Information, Equipment Description and Theory of Operation

General Information ..... WP 0001

Table 1. Nomenclature Cross-Reference List 0001-3
Table 2. List of Abbreviations/Acronyms 0001-3

Equipment Description and Data ..... WP 0002

Table 1. Tray Ration Heater (TRH) 0002-2
Table 2. TRH Inverter 0002-2
Table 3. Modern Burner Unit (MBU) 0002-3
Table 4. AK Tool Box 0002-3
Table 5. AK Utensil Box 0002-4
Table 6. Burner Maintenance Kit. 0002-4
Table 7. Insulated Beverage Dispenser 0002-5
Table 8. Side Loading Pan Carrier 0002-5
Table 9. Insulated Food Container 0002-5
Table 10. MBU Accessories 0002-5
Table 11. M59A Field Range and Outfit 0002-6
Table 12. Griddle Assembly 0002-6
Table 13. Cooking Pot Cradle Assembly 0002-6

Theory of Operation ..... WP 0003

Figure 1. Atomization Principle 0003-2
Figure 2. TRH Tank Electrical Control Box Schematic 0003-3

Chapter 2 – Operator Instructions

Description and Use of Operator Controls and Indicators ..... WP 0004

Figure 1. Tray Ration Heater Electrical Control Box (Driver Side) 0004-1
Figure 2. Tray Ration Heater Electrical Control Box (Passenger Side) 0004-2
Figure 3. Inverter Assembly 0004-3
Figure 4. TRH Burner Assembly 0004-4
Figure 5. TRH Burner Control Box 0004-5
Figure 6. Burner Test Box 0004-6

Operation Under Usual Conditions ..... WP 0005

Figure 1. Folding Table Setup and Placement 0005-5
Figure 2. IFC Placement 0005-6
Figure 3. Utensil Box Location 0005-7
Figure 4. Can Opener Base and Rail Placement 0005-7
Figure 5. Can Opener and Beverage Dispensers Placement 0005-8
Figure 6. Cooking Pot Cradle Removal 0005-9
Figure 7. Cooking Pot Assembly Placement 0005-10
Figure 8. Cooking Pot Assembly and Griddle Assembly Placement 0005-11
Table 1. Decals and Instruction Plates 0005-13
Figure 9. LTT D-ring Placement 0005-16
Figure 10. LTT Landing Legs and TRH Installation 0005-18
Figure 11. IBD Placement 0005-19
Figure 12. Securing IBDs 0005-20
Figure 13. M59A Placement 0005-21
Figure 14. Positioning M59A and Accessories 0005-22

TABLE OF CONTENTS - Continued

WP Sequence No.

Page No.

Figure 15. Securing M59A and Griddle Assembly.... 0005-23
Figure 16. Water Can and Cooking Pot Cradle Assembly Placement.... 0005-24
Figure 17. Securing Cooking Pots.....0005-25
Figure 18. Securing Water Cans and TRH Positioning.....0005-26
Figure 19. TRH Burner-side Cargo Strap Path.... 0005-27
Figure 20. TRH Drain-side Cargo Strap Path.....0005-29
Figure 21. Securing IBDs.... 0005-30
Figure 22. Storing the Ice Chest.....0005-31
Figure 23. Water Cans and MBU Tool Box.... 0005-32
Figure 24. Routing the Second Strip 0005-32
Figure 25. Water Cans and MBU Tool Box 0005-33

Tray Ration Heater (TRH) Operation under Usual Conditions ..... WP 0006

Figure 1. TRH Power Connections.....0006-2
Figure 2. TRH Power Inverter.....0006-3
Figure 3. Remove TRH Burner Cover 0006-4
Figure 4. Fuel Flow and Air Flow Controls 0006-4
Figure 5. Pull-on/push-off Switch.....0006-5
Figure 6. TRH Burner Control Box Reset Button 0006-5
Figure 7. Priming Procedure.....0006-6
Figure 8. Pull-on/push-off Switch.....0006-7

Operation Under Unusual Conditions ..... WP 0007

Chapter 3 – Troubleshooting Procedures

Troubleshooting Index..... WP 0008

Table 1. Malfunction Symptom Index 0008-1

Operator Troubleshooting Procedures..... WP 0009

Figure 1. TRH Inverter GFCI Outlet 0009-2
Figure 2. Replacing Electrical Control Box with Diagnostic Test Box 0009-4
Figure 3. TRH Control Box Reset Button 0009-5
Figure 4. Priming Procedure.....0009-6
Figure 5. Fuel Flow and Air Flow Controls 0009-7
Figure 6. Photocell Orientation 0009-8
Figure 7. Replacing Electrical Control Box with Diagnostic Test Box 0009-12
Figure 8. Fuel Sump Plug.....0009-15
Figure 9. TRH Tank Toggle Switch 0009-16
Figure 10. TRH Burner Upper Fan Housing.....0009-18

Maintainer Troubleshooting Procedures ..... WP 0010

Figure 1. Replacing Electrical Control Box with Diagnostic Test Box 0010-2
Figure 2. TRH Tank Terminal Strip 0010-3
Figure 3. TRH Tank Terminal Strip 0010-4
Figure 4. TRH Tank Terminal Strip 0010-5
Figure 5. Saddle Pin Locations.....0010-7
Figure 6. Fuel Sump Retaining Screws.....0010-8
Figure 7. Fuel Sump Drain Plug 0010-9
Figure 8. Fuel Sump Gasket.....0010-10

TABLE OF CONTENTS - Continued

WP Sequence No.

Page No.

Figure 9. Flow Control Module Cover Gasket 0010-11
Figure 10. Removing the Crossover Tube 0010-12
Figure 11. Crossover Tube O-rings....0010-12
Figure 12. Removing TRH Burner Front Flange 0010-13
Figure 13. TRH Burner Motor and Blower Wheel....0010-15

Multi-Fuel Burner Test.... WP 0011

Table 1. Bench Testing Materials 0011-2
Figure 1. Electrical Control Box Removal....0011-2
Figure 2. Test Control Box Placement 0011-3
Figure 3. Typical Bench Testing Setup 0011-4
Figure 4. Diagnostic Test Box Status 0011-5
Figure 5. Photocell Test....0011-6
Figure 6. Test Control Box....0011-6
Figure 7. Photocell to Power Cable Connection....0011-7
Figure 8. Photocell Orientation 0011-8
Figure 9. Test Control Box....0011-9
Figure 10. TRH Burner Priming Port 0011-10
Figure 11. Test Control Box....0011-11
Figure 12. Fuel Tower Cover....0011-12
Figure 13. Fuel Pump Priming....0011-12
Figure 14. Fuel Tower 0011-13
Figure 15. Fuel Control Setting 0011-14
Figure 16. Pressure Gauge Placement 0011-15
Figure 17. Test Control Box....0011-15
Figure 18. Vacuum and Pressure Gauge Placement....0011-16
Figure 19. Test Control Box....0011-17
Figure 20. Control Box Reset 0011-18
Figure 21. Draining Fuel Sump....0011-20

Chapter 4 – Preventive Maintenance Checks and Services

Preventive Maintenance Checks and Services (PMCS) Introduction.... WP 0012

Preventive Maintenance Checks and Services (PMCS) Procedures .... WP 0013

Table 1. Preventive Maintenance Checks and Services for Assault Kitchen....0013-1
Figure 1. PMCS of TRH Burner Assembly....0013-1
Figure 2. PMCS of TRH Tank....0013-2
Figure 3. PMCS of AK Fuel and Electrical Systems 0013-3
Figure 4. PMCS of TRH Power Inverter....0013-4
Figure 5. PMCS of Tool Kit, Maintenance Kit, Cooking Pot Cradle Assembly, and MBU. 0013-6
Figure 6. PMCS of TRH....0013-5

TABLE OF CONTENTS - Continued

WP Sequence No.

Page No.

Chapter 5 – Operator Maintenance Instructions

Service Upon Receipt Installation ..... WP 0014

Figure 1. Cargo Strap Operation 0014-2
Figure 2. HMMWV D-Ring Placement.....0014-3
Figure 3. Thread Cargo Straps to Secure Netting.....0014-4
Figure 4. Cargo Strap Placement under Cargo Netting 0014-5
Figure 5. Ice Chest and Cooking Pot Cargo Strap Placement.....0014-6
Figure 6. Ice Chest and Cooking Pot Cradle Placement.....0014-7
Figure 7. Ice Chest Strapping Procedure 0014-8
Figure 8. Ice Chest Securing Procedure 0014-8
Figure 9. Water Can Placement 0014-9
Figure 10. LTT D-ring Placement 0014-11
Figure 11. LTT Driver Side Storage Rack 0014-12
Figure 12. Securing LTT Driver Side Storage Rack to Wheel Well..0014-13
Figure 13. Securing LTT Driver Side Storage Rack 0014-14
Figure 14. LTT Passenger Side Storage Rack.....0014-15
Figure 15. Securing LTT Passenger Side Storage Rack 0014-16
Figure 16. SLPC Placement 0014-17
Figure 17. SLPC Strap Down 0014-17
Figure 18. SLPC Strap Down 0014-18
Figure 19. SLPC Ratchet Placement 0014-18
Figure 20. IFC Placement.....0014-19
Figure 21. IFC Placement.....0014-20
Figure 22. IFC Ratchet Placement 0014-21
Figure 23. Beverage Dispenser Placement.....0014-22
Figure 24. Beverage Dispenser Placement.....0014-23
Figure 25. Beverage Dispenser Placement.....0014-24
Figure 26. Beverage Dispenser Placement.....0014-25
Figure 27. Beverage Container Elastic Hookups 0014-26
Figure 28. Strap Down Beverage Containers.....0014-27
Figure 29. Strap Down Beverage Containers.....0014-27
Figure 30. Strap Down Beverage Containers.....0014-28
Figure 31. NATO Receptacle Located in Storage Well.....0014-29
Figure 32. Remove Inverter from Hanging Bracket.....0014-30
Figure 33. Press Fit NATO Plug into NATO Plug Adapter 0014-31
Figure 34. Inverter Power Cord and Press Fit Adapter Placement ..0014-31
Figure 35. Inverter Power Cord and Press Fit Adapter 0014-32
Figure 36. Securing Inverter Power Cord and Press Fit Adapter.....0014-32
Figure 37. Inverter Placement 0014-33
Figure 38. Securing Inverter Assembly 0014-33
Figure 39. Securing Power Cord to LTT D-Ring and Tailgate 0014-34
Figure 40. NATO Extension Adapter Connection.....0014-35
Figure 41. Hang Inverter on Wall Between Seats 0014-36
Figure 42. Secure Inverter to Wall Between Seats 0014-37
Figure 43. Connect 24 VDC Power Cord to NATO Receptacle Under Passenger Seat 0014-38
Figure 44. Connect Extension Cord to Inverter and Pass Cord into Cargo Area.....0014-39
Figure 45. Pass Extension Cord from HMMWV Into Trailer.....0014-40
Figure 46. Secure Extension Cord 0014-41
Figure 47. Maintenance Kit Placement 0014-42
Figure 48. Maintenance Kit Tie Down 0014-43
Figure 49. Fuel Can Adapter for Installation.....0014-44

TABLE OF CONTENTS - Continued

WP Sequence No.

Page No.

Figure 50. Fuel Can Cargo Strap Placement 0014-45
Figure 51. Fuel Can Ratchet Placement 0014-46
Figure 52. Folding Table Cargo Strap Placement 0014-47
Figure 53. Folding Table Placement 0014-48
Figure 54. Securing Folding Tables with Cargo Strap 0014-48
Figure 55. Securing Utensil Box 0014-49
Figure 56. Fire Extinguisher Bracket Placement 0014-50
Figure 57. Securing the Fire Extinguisher 0014-50
Figure 58. Loading the TRH on LTT Bed 0014-51
Figure 59. TRH Burner-side Cargo Strap Path 0014-53
Figure 60. TRH Drain-side Cargo Strap Path 0014-55
Figure 61. Orient Exhaust Deflector Downward 0014-56
Figure 62. TRH Fuel and Power Connections 0014-57
Figure 63. TRH Inverter Power Connection 0014-57
Figure 64. AK Tool Box Placement 0014-58

Service Upon Receipt Static Configuration .... WP 0015

Figure 1. Example of a Static Configuration 0015-3
Figure 2. Example of a Table Layout 0015-4

Cleaning .... WP 0016

Tank Assembly, Repair .... WP 0017

Figure 1. Pin Lock Removal 0017-1
Figure 2. Replacing Wire Rope Assembly 0017-2
Figure 3. Pin Lock Replacement 0017-3

Adapter Kit, Gravity Feed, Replace .... WP 0018

Figure 1. Disconnecting Fuel Hose 0018-1
Figure 2. Fuel Can Adapter and Vent Cap 0018-2
Figure 3. Fuel Line Connection 0018-3

Filter Element, Fluid, Replace .... WP 0019

Figure 1. Fuel Filter Locations 0019-1
Figure 2. Replace Fuel Filters. 0019-2

Rack, Tray Ration, Replace .... WP 0020

Figure 1. TRH Tray Rack Removal 0020-1
Figure 2. TRH Tray Rack Removal 0020-2

Power Cord, Replace .... WP 0021

Figure 1. TRH Power Connections 0021-1
Figure 2. TRH Power Connections 0021-2

Lid Assembly, Adjust, Replace .... WP 0022

Figure 1. Adjusting the Lid Latch 0022-1
Figure 2. Removing Lid Stop Bolt 0022-2
Figure 3. Removing Lid Stop 0022-2
Figure 4. Adjusting the TRH Tank Lid 0022-3
Figure 5. Removing Lid Stop Bolt 0022-4
Figure 6. Removing Lid Stop 0022-4
Figure 7. Unseating Lid With Hammer 0022-5
Figure 8. Aligning the TRH Tank Lid 0022-6

TABLE OF CONTENTS - Continued

WP Sequence No.

Page No.

Straight Pipe to Hose Adapter, Replace ..... WP 0023

Figure 1. Removing the Pipe to Hose Adapter 0023-1
Figure 2. Installing the Pipe to Hose Adapter 0023-2

Ball Valve, Replace ..... WP 0024

Figure 1. Removing the Pipe to Hose Adapter 0024-1
Figure 2. Replacing the Drain Valve 0024-2

Exhaust Deflector, Replace ..... WP 0025

Figure 1. TRH Exhaust Deflector 0025-1
Figure 2. TRH Exhaust Deflector 0025-2

Burner, Multi-Fuel, Replace ..... WP 0026

Figure 1. Burner On/Off Switch and Cover Removal 0026-2
Figure 2. Hose Clamp and Power Cord Removal 0026-3
Figure 3. Remove Hitch Pins 0026-3
Figure 4. Draining Fuel Sump 0026-5
Figure 5. Burner with Red Flange Gasket 0026-5
Figure 6. Burner Saddle Pins and Fuel Line Installation 0026-6
Figure 7. Power Plug Installation 0026-6
Figure 8. Fuel Line Connection 0026-7
Figure 9. TRH Power Connections 0026-8

Flame Safeguard Control, Replace ..... WP 0027

Figure 1. Flame Safeguard Control Replacement. 0027-1

Filter Element, Air Intake, Replace ..... WP 0028

Figure 1. Remove Filter Plug 0028-1
Figure 2. Remove Intake Air Filter Element 0028-2
Figure 3. Replace Filter Plug 0028-2

Photo Semiconductor Device, Replace ..... WP 0029

Figure 1. Removing the Photocell 0029-1
Figure 2. Photocell to Power Cable Connection 0029-2
Figure 3. Photocell Orientation 0029-3

Food and Beverage Containers, Repair ..... WP 0030

Figure 1. Vent Cap Replacement... 0030-1
Figure 2. Insulated Beverage Dispenser... 0030-2
Figure 3. Beverage Dispenser Lid Latch... 0030-3
Figure 4. Dispenser Faucet and Spout Assembly... 0030-4
Figure 5. SLPC Door Gasket Replacement... 0030-5
Figure 6. SLPC Hinge Replacement... 0030-6
Figure 7. SLPC Door Replacement... 0030-7
Figure 8. IFC Hinge Replacement... 0030-8
Figure 9. Ice Chest Lid Replacement... 0030-9
Figure 10. Ice Chest Repair 0030-10

TABLE OF CONTENTS - Continued

WP Sequence No.

Page No.

Chapter 6 – Maintainer Maintenance Instructions

Toggle Switch, Replace ..... WP 0031

Figure 1. Access Cover Removal 0031-1
Figure 2. Toggle Switch Removal 0031-2
Figure 3. Toggle Switch Replacement 0031-3
Figure 4. Access Cover Replacement 0031-4

Light Switch, Push-Pull, Repair, Replace ..... WP 0032

Figure 1. Pull-On/Push-Off Switch. 0032-1
Figure 2. Pull-On/Push-Off Switch Bulb Replace 0032-2
Figure 3. Access Cover Removal 0032-3
Figure 4. Pull-On/Push-Off Light Switch Retaining Nut 0032-3
Figure 5. Pull-On/Push-Off Switch Replacement. 0032-4
Figure 6. Access Cover Replacement 0032-5

Circuit Breaker, Replace ..... WP 0033

Figure 1. Access Cover Removal.. 0033-1
Figure 2. Circuit Breaker Removal... 0033-2
Figure 3. Removing Circuit Breaker Reset Switch.. 0033-2
Figure 4. Circuit Breaker Removal.. 0033-3
Figure 5. Access Cover Replacement.. 0033-3

Electrical Connector, Replace ..... WP 0034

Figure 1. Access Cover Removal.. 0034-1
Figure 2. Main Power Fitting Removal. 0034-2
Figure 3. Main Power Fitting Wiring. 0034-2
Figure 4. Ground Wire Connection. 0034-3
Figure 5. Main Power Fitting Replacement. 0034-3
Figure 6. Access Cover Replacement. 0034-4

Terminal Junction Block, Replace ..... WP 0035

Figure 1. Access Cover Removal... 0035-1
Figure 2. TRH Tank Terminal Block... 0035-2
Figure 3. Access Cover Replacement.. 0035-3

Liquid Level Switch, Replace ..... WP 0036

Figure 1. Access Cover Removal... 0036-1
Figure 2. Removing Liquid Level Switch Mounting Bracket... 0036-2
Figure 3. Cutting Liquid Level Switch Wires.. 0036-2
Figure 4. Installing Liquid Level Switch and Wires. 0036-3
Figure 5. Access Cover Replacement.. 0036-4

Teflon Probe Sensor, Replace ..... WP 0037

Figure 1. Secondary Access Panel Cover 0037-1
Figure 2. Teflon Probe Location.. 0037-2
Figure 3. Teflon Probe and Setscrew Removal 0037-2
Figure 4. Removing the Teflon Probe... 0037-3
Figure 5. Teflon Probe... 0037-3
Figure 6. Installing Teflon Probe... 0037-4
Figure 7. Secondary Access Panel Cover 0037-4

TABLE OF CONTENTS - Continued

WP Sequence No.

Page No.

Tilt Switch, Replace ..... WP 0038

Figure 1. Access Cover Removal.. 0038-1
Figure 2. Tank Tilt Switch Removal.. 0038-2
Figure 3. Tilt Switch Wiring.. 0038-2
Figure 4. Access Cover Replacement.. 0038-3

Thermal Resistor, Replace ..... WP 0039

Figure 1. Secondary Access Panel Cover.. 0039-1
Figure 2. Thermal Resistor Location.. 0039-2
Figure 3. Removing the Thermal Resistor Retaining Nuts.. 0039-2
Figure 4. Removing the Thermal Resistor 0039-3
Figure 5. Removing the Thermal Resistor Retaining Nuts.. 0039-3
Figure 6. Wire Connections Using a Butt Connector... 0039-4
Figure 7. Secondary Access Panel Cover 0039-4

Power Inverter, Static, Test, Repair ..... WP 0040

Figure 1. TRH Inverter.. 0040-1
Figure 2. GFCI Receptacle on TRH Inverter... 0040-2
Figure 3. NATO Plug Receptacle.... 0040-3
Figure 4. Removing TRH Inverter Fuse... 0040-4
Figure 5. Removing TRH Inverter Fuse.... 0040-4
Figure 6. Replacing TRH Inverter Fuse 0040-5
Figure 7. NATO Plug Receptacle Connection.. 0040-6

Tank Skid, Replace ..... WP 0041

Figure 1. Removing Heater Skids. 0041-1
Figure 2. Removing Heater Skids 0041-2

Shock Mount, Replace ..... WP 0042

Figure 1. Removing Shock Mounts. 0042-2
Figure 2. Removing Shock Mounts 0042-2

Multi-Fuel Burner, Repair ..... WP 0043

Figure 1. Control Box Removal and Fuel Drainage 0043-2
Figure 2. Lower Fan Housing Flange Removal 0043-2
Figure 3. Atomizing Chamber Removal 0043-3
Figure 4. Primer Port Tubing and Primer Port Connector Removal 0043-3
Figure 5. Air Solenoid Coil and Air Solenoid Removal 0043-4
Figure 6. Air Solenoid Coil and Air Line Removal 0043-4
Figure 7. Air Line, Fuel Line, and Fuel Sump Removal 0043-5
Figure 8. Fuel Sump and Fuel Solenoid Power Cable 0043-6
Figure 9. Photocell and Power Pack Removal 0043-7
Figure 10. Photocell and Power Pack Removal 0043-7
Figure 11. Photocell and Power Pack Removal 0043-8
Figure 12. Photocell Base and Control Box Base Removal 0043-8
Figure 13. Overflow Safety Device Removal 0043-9
Figure 14. Spade Connection and Transformer Retaining Screw Removal 0043-10
Figure 15. Upper Fan Housing and Blower Control Knob Removal. 0043-11
Figure 16. Blower Regulating Scroll Removal 0043-12
Figure 17. Air Inlet Cover Removal 0043-12

TABLE OF CONTENTS - Continued

WP Sequence No.

Page No.

Figure 18. Flow Control Module Removal 0043-13
Figure 19. Pump Assembly Removal 0043-13
Figure 20. Pump Coupling and Fuel Solenoid Removal 0043-14
Figure 21. Blower Wheel Removal 0043-14
Figure 22. Compressor Air Filter Removal 0043-15
Figure 23. Solenoid and Compressor Removal 0043-15
Figure 24. Compressor Head and Piston Ring Removal 0043-16
Figure 25. Piston O-Ring Removal 0043-16
Figure 26. Replacing the Piston O-Ring 0043-17
Figure 27. Compressor Head and Piston Ring Replacement 0043-17
Figure 28. Solenoid and Compressor Replacement 0043-18
Figure 29. Compressor Air Filter Replacement. 0043-18
Figure 30. Blower Wheel Replacement 0043-19
Figure 31. Pump Coupling and Fuel Solenoid Replacement 0043-19
Figure 32. Pump Assembly Replacement 0043-20
Figure 33. Flow Control Module Replacement 0043-20
Figure 34. Flow Control Module Cover Replacement 0043-21
Figure 35. Blower Regulating Scroll Replacement 0043-21
Figure 36. Upper Fan Housing and Blower Control Knob Replacement 0043-22
Figure 37. Upper Fan Housing Replacement 0043-22
Figure 38. Spade Connection and Transformer Placement 0043-23
Figure 39. Overflow Safety Device Replacement 0043-24
Figure 40. Photocell Base and Control Box Base Replacement 0043-25
Figure 41. Photocell and Power Pack Replacement 0043-25
Figure 42. Burner Wiring Diagram. 0043-26
Figure 43. Fuel Sump and Fuel Solenoid Power Cable 0043-27
Figure 44. Air Line and Fuel Line Replacement 0043-28
Figure 45. Air Solenoid Coil and Air Line Replacement 0043-29
Figure 46. Air Solenoid Coil and Air Solenoid Replacement 0043-29
Figure 47. Primer Port Tubing and Primer Port “T” Replacement 0043-30
Figure 48. Atomizing Chamber Replacement. 0043-30
Figure 49. Lower Fan Housing Flange Replacement. 0043-31
Figure 50. TRH Burner Control Box Replacement 0043-31

Fuel Pump, Repair, Replace ....WP 0044

Figure 1. Fuel Pump Retaining Screws 0044-1
Figure 2. Fuel Pump Membrane and Spring 0044-2
Figure 3. Fuel Pump Membrane and Disk 0044-2
Figure 4. Fuel Pump Membrane and Spring 0044-3
Figure 5. Fuel Pump Cover 0044-3
Figure 6. Removing the Fuel Sump 0044-4
Figure 7. Crossover Tube, Sump, and Solenoid Removal 0044-4
Figure 8. Primer Port Tubing Removal 0044-5
Figure 9. Metal Tube Assembly Removal 0044-5
Figure 10. Fuel Pump Assembly Removal 0044-6
Figure 11. Fuel Pump Coupling. 0044-6
Figure 12. Fuel Pump Assembly Removal 0044-7
Figure 13. Metal Tube Assembly Removal 0044-7
Figure 14. Crossover Tube, Sump, and Solenoid Replacement 0044-8
Figure 15. Primer Port Tube Replacement 0044-9
Figure 16. Tighten Fuel Pump Assembly Retaining Screws 0044-9

TABLE OF CONTENTS - Continued

WP Sequence No.

Page No.

Atomizing Chamber, Repair, Replace ..... WP 0045

Figure 1. Lower Fan Housing Flange Removal... 0045-1
Figure 2. Atomizing Chamber Removal... 0045-2
Figure 3. Igniter Replacement... 0045-2
Figure 4. Atomizing Chamber Replacement... 0045-3
Figure 5. Lower Fan Housing Flange Replacement.....0045-3
Figure 6. Lower Fan Housing Flange Removal... 0045-4
Figure 7. Atomizing Chamber Removal... 0045-4
Figure 8. Atomizing Chamber Replacement... 0045-5
Figure 9. Lower Fan Housing Flange Replacement.....0045-5

Fuel Sump, Replace ..... WP 0046

Figure 1. Fuel Sump Removal... 0046-1
Figure 2. Install Replacement Fuel Sump... 0046-2

Lid Assembly, Repair ..... WP 0047

Figure 1. Replacing TRH Lid Gasket.....0047-1

Tank Assembly, Repair ..... WP 0048

Figure 1. Lid Latch Placement.....0048-2
Figure 2. Lid Latch Catch Plate Placement.... 0048-3

Tray Rack, Ration, Repair ..... WP 0049

Figure 1. Tray Ration Rack.....0049-1

Hardware and Shelving, Replace ..... WP 0050

Figure 1. Removing Inverter 0050-1
Figure 2. LTT Driver Side Storage Rack.... 0050-2
Figure 3. LTT Driver Side Storage Rack.... 0050-2
Figure 4. LTT Driver Side Storage Rack.... 0050-3
Figure 5. Securing Driver Side Storage Rack to Wheel Well.... 0050-3
Figure 6. Securing Driver Side Storage Rack.... 0050-4
Figure 7. Securing Inverter Power Cord and Press Fit Adapter.....0050-5
Figure 8. Inverter Placement 0050-5
Figure 9. LTT Passenger Side Storage Bracket.....0050-6
Figure 10. LTT Passenger Side Storage Bracket Hardware Alignment.....0050-7

Preparation for Storage ..... WP 0051

Preparation for Shipment ..... WP 0052

Illustrated List of Manufactured Items Introduction ..... WP 0053

Illustrated List of Manufactured Items ..... WP 0054

Table 1. Illustrated List of Manufactured Items Index.....0054-1
Figure 1. Dimensions for NATO Adapter Assembly 0054-1
Figure 2. Dimensions for Extension Cord Cable 0054-2

TABLE OF CONTENTS - Continued

WP Sequence No.

Page No.

Chapter 7 – Parts Information

Repair Parts and Special Tools List (RPSTL), Introduction ..... WP 0055

Table 1. SMR Code Explanation... 0055-1

Group 01 Tray Ration Heater ..... WP 0056

Figure 1. Tray Ration Heater. 0056-1

Group 0113 Burner, Multi-Fuel ..... WP 0057

Figure 2. Burner, Multi-Fuel 0057-1

Group 02 Cooking Appliances ..... WP 0058

Figure 3. Cooking Appliances 0058-2

Group 03 Ancillary Equipment ..... WP 0059

Figure 4. Ancillary Equipment 0059-1

Group 04 Hardware and Shelving ..... WP 0060

Figure 5. Hardware and Shelving 0060-2

National Stock Number Index ..... WP 0061

Part Number Index ..... WP 0062

Chapter 8 – Supporting Information

References ..... WP 0063

Maintenance Allocation Chart (MAC) Introduction ..... WP 0064

Maintenance Allocation Chart (MAC) ..... WP 0065

Table 1. Maintenance Allocation Chart for Assault Kitchen 0065-1
Table 2. Tools and Test Equipment for Assault Kitchen 0065-4
Table 3. Remarks for Assault Kitchen 0065-4

Components of End Item (COEI) and Basic Issue Items (BII) LISTS ..... WP 0066

Table 1. Components of End Items (COEI) List 0066-2
Table 2. Basic Issue Items (BII) 0066-5

Additional Authorization List (AAL) ..... WP 0067

Table 1. Additional Authorization List (AAL) 0067-2

Expendable and Durable Items List ..... WP 0068

Table 1. Expendable and Durable Items List 0068-2

Tool Identification List ..... WP 0069

Table 1. Assault Kitchen Tool Identification List 0069-1

Index INDEX-1

HOW TO USE THIS MANUAL

HOW TO OBTAIN TECHNICAL MANUALS

When a new system is introduced to the Army inventory, it is the responsibility of the receiving units to notify and inform the Unit Publications Clerk that a Technical Manual is available for the new system. Throughout the life cycle of the new system, the Publications Proponent will also provide updates and changes to the Technical Manual.

To receive new Technical Manuals or change packages to fielded Technical Manuals, provide the Unit Publications Clerk the full Technical Manual number, title, date of publication, and number of copies required. The Unit Publications Clerk will then justify the request through the Unit Publications Officer. When the request is approved, DA Form 12-R is used to order the Technical Manual from the Army Publishing Directorate (APD). Obtain the form and request a publications account from the APD Web site at http://www.apd.army.mil. Once on the Website, click on the "Orders/Subscriptions/Reports" tab. From the dropdown menu, select "Establish an Account," then select "Tutorial" and follow the instructions in the tutorial presentation.

Complete information for obtaining Army publications can be found in DA PAM 25-33.

ORGANIZATION OF THIS MANUAL

In this manual, primary chapters appear in upper case/capital letters; work packages are presented in numeric sequence, e.g., 0001, 0002; paragraphs within a work package are not numbered and are presented in a titled format. For a first level paragraph, titles are in all upper case/capital letters, e.g., FRONT MATTER. Subordinate paragraph titles will have the first letter of the first word of each principle word all upper case/capital letters, e.g., Manual Organization and Page Numbering System. The location of additional material that must be referenced is clearly marked. Illustrations supporting maintenance procedures/text are located underneath, or as close as possible to, their referenced paragraph.

FRONT MATTER. Front matter consists of front cover, warning summary, title block, table of contents, and how to use this manual page.

CHAPTER 1 – GENERAL INFORMATION, EQUIPMENT DESCRIPTION, AND THEORY OF OPERATION. Chapter 1 Contains introductory information on the Army Assault Kitchen and its associated equipment as well as theory of operation.

CHAPTER 2 – OPERATOR INSTRUCTIONS. Chapter 2 provides operator procedures required for use of the Army Assault Kitchen and its associated equipment by the operator, including description and use of controls and indicators, operational deployment cycles, and cleaning.

CHAPTER 3 –TROUBLESHOOTING PROCEDURES. Chapter 3 provides a troubleshooting index listing all of the problems you are likely to encounter with the Army Assault Kitchen, as well as, references to the individual troubleshooting procedure work packages and troubleshooting procedures authorized for operator and maintainer level maintenance personnel.

CHAPTER 4 – PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) PROCEDURES. Chapter 4 contains PMCS maintenance procedures.

CHAPTER 5 – OPERATOR MAINTENANCE INSTRUCTIONS. Chapter 5 provides maintenance procedures authorized at the operator level that include service upon receipt and repair or replacement of key components.

CHAPTER 6 – MAINTAINER MAINTENANCE INSTRUCTIONS. Chapter 6 provides maintenance procedures authorized at the field level that includes repair and replacement of key components, preparation for storage and shipment, and manufactured items.

HOW TO USE THIS MANUAL – CONTINUED

CHAPTER 7 – PARTS INFORMATION. Chapter 7 contains Repair Parts and Special Tools List (RPSTL), national stock number index and part number index.

CHAPTER 8 – SUPPORTING INFORMATION. Chapter 8 contains references, maintenance allocation chart and expendable and durable items list.

REAR MATTER. Rear matter consists of alphabetical index, DA Form 2028, authentication page, and back cover.

Manual Organization and Page Numbering System. Within a chapter, each work package is numbered sequentially starting at page 1. The work package has its own page numbering scheme and is independent of the page numbering used by other work packages. A page number such as **0010-15/16 blank** means that page 15 contains information but page 16 of that work package has been intentionally left blank.

Finding Information. The table of contents permits the reader to find information in the manual quickly. The reader should start here first when looking for a specific topic. The table of contents lists the topics, figures, and tables contained within each chapter and the page number where it can be found.

Example: If the reader were looking for instructions on Operating Under Usual Conditions, the table of contents indicates that information on operation can be found in Chapter 2. Scanning down the listings for Chapter 2, information on how to operate the Army Assault Kitchen can be found in WP 0005, Operation Under Usual Conditions (that is, Work Package 5).

An alphabetic index can be found at the back of the manual; specific topics are listed with the corresponding page number.

CHAPTER 1

GENERAL INFORMATION, EQUIPMENT DESCRIPTION, AND THEORY OF OPERATION FOR ASSAULT KITCHEN

OPERATOR AND FIELD MAINTENANCE

GENERAL INFORMATION

SCOPE

Type of Manual

This technical manual provides Operator and Field maintenance instructions for the Army Assault Kitchen, NSN 7360-01-558-3100. This manual also provides a Repair Parts and Special Tools List (RPSTL), located in WP 0053 through WP 0058.

Model Number and Equipment Name

Army Part Number AK-0100, ASSAULT KITCHEN

Purpose of Equipment

The Assault Kitchen provides capabilities to deliver hot, tray ration food service to soldiers in remote locations. Each system is highly mobile and has the ability to serve 250 tray ration meals in one location with a combined capability to serve 500 tray ration meals in one day.

MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your Assault Kitchen needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance.

If you have Internet access, the easiest and fastest way to report problems or suggestions is to go to https://aeps.ria.army.mil/aepspublic.cfm (scroll down and choose the “Submit Quality Deficiency Report” bar). The Internet form lets you choose to submit an Equipment Improvement Recommendation (EIR), a Product Quality Deficiency Report (PQDR) or a Warranty Claim Action (WCA).

You may also submit your information using an SF 368 (Product Quality Deficiency Report). You can send your SF 368 via e-mail, regular mail, or facsimile using the addresses/facsimile numbers specified in DA PAM 750-8, The Army Maintenance Management System (TAMMS). We will send you a reply.

CORROSION PREVENTION AND CONTROL (CPC)

Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

Corrosion specifically occurs with metals. It is an electrochemical process that causes the degradation of metals. It is commonly caused by exposure to moisture, acids, bases, or salts. An example is the rusting of iron. Corrosion damage in metals can be seen, depending on the metal, as tarnishing, pitting, fogging, surface residue, and/or cracking.

Plastics, composites, and rubbers can also degrade. Degradation is caused by thermal (heat), oxidation (oxygen), solvation (solvents), or photolytic (light, typically UV) processes. The most common exposures are excessive heat or light. Damage from these processes will appear as cracking, softening, swelling, and/or breaking. SF Form 368, Product Quality Deficiency Report should be submitted to the address specified in DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual.

OZONE DEPLETING SUBSTANCES (ODS)

No Class 1 Ozone Depleting Substances have been identified for use with the Assault Kitchen.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Objective

Methods of destruction used to inflict damage on food service equipment should make it impossible to restore equipment to a usable-condition in a combat zone, by either repair or cannibalization.

Authority

Destruction of food service equipment that is in imminent danger of capture by an enemy is a command decision that must be made by the commander, or equivalent.

Implementation Plan

Destruction of Army materiel to prevent enemy use shall be in accordance with TM 750-244-3.

PREPARATION FOR STORAGE AND SHIPMENT

For storage and shipment, refer to WP 0051 and WP 0052 of this manual.

WARRANTY INFORMATION

The TRH Burner and TRH Electronics are warranted for one year. The warranty starts on the date found in block 23 of DA Form 2408-9, Equipment Control Record. Report all defects to your supervisor, who will take appropriate action.

NOMENCLATURE CROSS-REFERENCE LIST

Table 1. Nomenclature Cross-Reference List.

Common Name	Official Nomenclature
Assault Kitchen	Kitchen Module
AUTO/BOIL Switch	Toggle Switch
Bungee Cord	Cord Assembly, Elastic
Exhaust Deflector	Pipe Exhaust
Fuel Filter	Filter Element, Fluid
Ice Chest	Chest, Ice Storage
Insulated Food Carrier	Food Transporter, Insulated
Light Tactical Trailer	M1101 or M1102 Trailer
Liquid/beverage Dispenser	Dispenser, Liquid, Insulated
LTT Driver Side Storage Rack	Accessories Stowage Box
LTT Passenger Side Storage Rack	Accessories Stowage Box
Photocell	Semiconductor Device, Photo
Pull-on/Push-off Knob	Push-Pull Light Switch
Shock Mount	Mount Resilient Weapon System
Side Loading Pan Carrier	Food Container, Insulated
Storage Rack	Bracket
Tray Rations	UGR – H&S
TRH	Tray Ration Heater
TRH Burner	Burner, Multi-Fuel
TRH Burner Compressor Head	Gasket
TRH Burner Control Box	Flame Safeguard Control
TRH Tank Lid Gasket	Rubber Strip

LIST OF ABBREVIATIONS/ACRONYMS

Table 2. List of Abbreviations/Acronyms.

Abbreviation/Acronym	Meaning
AC	Alternating Current
AK	Assault Kitchen
BTU	British Thermal Unit
CAGEC	Commercial and Government Entity Code
cfm	Cubic Feet Per Minute
CK	Containerized Kitchen
CO	Carbon Monoxide
CPC	Corrosion Prevention and Control
CTA	Common Table of Allowances
DA	Department of the Army
DC	Direct Current
DFA	Diesel Fuel Arctic
Dtd.	Dated
EA	Each
EIR	Equipment Improvement Recommendation
EDS	Electrostatic Discharge Sensitive
ESC	Equipment Serviceability Criteria
FSC	Federal Supply Classification
GFCI	Ground Fault Circuit Interrupter
GND	Ground
HMMWV	High Mobility Multipurpose Wheeled Vehicle
IAW	In Accordance With
IBD	Insulated Beverage Dispenser
ID	Identification
IFC	Insulated Food Carrier
inHg	Inches of Mercury
IP	In-Process Inspector

LIST OF ABBREVIATIONS/ACRONYMS – CONTINUED

Table 2. List of Acronyms/ Abbreviations. – Continued

Abbreviation/Acronym	Meaning
IUID	Item Unique Identification
JTA	Joint Table of Allowances
LED	Light Emitting Diode
LTT	Light Tactical Trailer
MAC	Maintenance Allocation Chart
MAM	Maintenance Advisory Message
MBU	Modern Burner Unit
MKT	Mobile Kitchen Trailer
MOD	Model
MOS	Military Occupational Specialty
MTOE	Modified Table of Organization and Equipment
MWO	Modification Work Order
NATO	North Atlantic Treaty Organization
NIIN	National Item Identification Number
NLT	No Later Than
No.	Number
NSN	National Stock Number
OD	Olive Drab
PIS	Placed In Service
PMCS	Preventive Maintenance Checks and Services
PPE	Personal Protective Equipment
PPM	Parts Per Million
PQDR	Product Quality Deficiency Report
PSI	Pounds per Square Inch
QD	Quick Disconnect Coupling
QDR	Quality Deficiency Reports
Quadcon	Quadruple Container
RFI	Radio Frequency Interference
RPSTL	Repair Parts and Special Tools List
RTV	Room Temperature Vulcanization
SATS	Standard Automotive Tool Set
SF	Standard Form
SICGARS	Single Channel Ground and Airborne Radio System
SLPC	Side Loading Pan Carrier
SMR	Source, Maintenance and Recoverability
SOP	Standard Operating Procedure
SOUM	Safety Of Use Message
TAMMS	The Army Maintenance Management System
TB	Technical Bulletin
TDA	Table of Distribution and Allowances
TDR	Transportation Discrepancy Report
TM	Technical Manual
TMDE	Test Measurement and Diagnostic Equipment
TRH	Tray Ration Heater
UGR – H&S	Unitized Group Ration – Heat and Serve
U/M	Unit of Measure
UOC	Usable on Code
UV	Ultra Violet
VAC	Volts, Alternating Current
VDC	Volts, Direct Current
WCA	Warranty Claim Action
WP	Work Package

QUALITY OF MATERIAL

Material used for replacement, repair, or modification must meet the requirements of this manual. If qualities of material requirements are not stated in this manual, the material must meet the requirements of the drawings, standards, specifications, or approved engineering change proposals applicable to the subject equipment.

SAFETY, CARE AND HANDLING

Use care in handling the components of the Assault Kitchen because exposed metal parts may cause injury. The Tray Ration Heater (TRH) and Modern Burner Unit (MBU) contained in the Assault Kitchen use flammable fuels that may cause serious injury if improperly handled. Always pay attention to the warnings, cautions, and notes contained in this manual. Ensure you read and understand their content to prevent serious injury to yourself and others, or damage to equipment.

COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), CTA 50-970, Expendable/Durable Items (Except Medical, Class V, Repair Parts and Heraldic Items), CTA 50-909, Field and Garrison Furnishings and Equipment or CTA 8-100, Army Medical Department Expendable/Durable Items, as applicable to your unit.

SUPPORTING INFORMATION FOR REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

TMDE, and support equipment are required. Refer to the Maintenance Allocation Chart (MAC) in Work Package 0063 for a listing of maintenance items and tools or test equipment. Refer to the Repair Parts and Special Tools List (RPSTL) in WP 0053 through WP 0058 for details concerning repair parts.

REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)

Repair parts are listed and illustrated in WP 0053 through WP 0058 of this manual.

WARNINGS, CAUTIONS AND NOTES

Be alert and note WARNINGS, CAUTIONS, and NOTES. These provide for safe operation of the equipment, and protect you and your equipment from injury and damage.

END OF WORK PACKAGE

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

The Assault Kitchen is a vehicle deployed food service system with heat-on-the-move capabilities to serve hot tray ration meals in remote areas.

Characteristics

- Deployed from a M1101 or M1102 Light Tactical Trailer (LTT), pulled by a M1097 or M1152 or HMMWV.
- Uses a Tray Ration Heater (TRH) to heat rations for food service in a short amount of time. Uses insulated beverage and food containers to store rations and beverages for service at multiple feeding locations.
- Each AK comes with a spare TRH Burner assembly for continued use in case of equipment damage or failure.
- The Assault Kitchen uses a Modern Burner Unit (MBU) and Cooking Pot Cradle Assembly, M59A Field Range and Griddle Assembly to assist in preparation of warming beverages and hot meals (limited UGR-A).

Capabilities and Features

- Can provide heat on-the-move Unitized Group Rations (UGR) heat-and-serve hot meal service for 250 meals at a feeding site and up to 500 meals in a day.
- Can provide static limited A-Ration capability for 150 meals at a static feeding site (WP 0015).
- The TRH includes thermostatic control and safety features for added protection against inadvertent start-up, low water excessive tilt, or electrical short.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

Tray Ration Heater (TRH)

The TRH is located in HMMWV trailer or at a static feeding site, depending on system configuration. The TRH consists of a 30-gallon capacity heater tank; hinged, latching lid with lockable arm; stabilizing skids and shock mounts; drain valve; electrical controls; and TRH Burner assembly. The TRH electrical system uses 120 VAC, 60 Hz, single-phase current, supplied by a Power Inverter that connects to a 24 VDC vehicle electrical system. The TRH burner assembly maintains the TRH tank water between 180 and 200 °F.

Tool and Utensil Kits

The Assault Kitchen comes equipped with tools, utensils, and spare parts needed to maintain and operate the system. The maintenance kit and tool box are located in the cargo bed of the trailer, depending on system configuration, and contain tools and spare parts required to service the TRH. The tool box provides tools used to install and replace components in the system. The cooking utensils box contains cooking utensils used for serving of rations.

Modern Burner Unit (MBU)

The Modern Burner Unit (MBU) is a lightweight modular system used as a primary heat source for the kitchen and sanitation equipment found within all Army field feeding systems and is employed in the Assault Kitchen for use with the cooking pot cradle assembly, M59A field range, and griddle assembly.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS – CONTINUED

Additional Components

Additional Kitchen Components for Army systems consists of insulated food containers, side loading pan carriers, insulated beverage dispensers, an ice chest, field tables, water cans, fuel cans, thermal gloves, M59A Field Range and MBU Outfit, Griddle Assembly, and Cooking Pot Cradle.

EQUIPMENT DATA FOR ASSAULT KITCHEN COMPONENTS

Table 1. Tray Ration Heater (TRH).

WEIGHT:	
TRH Empty	320 lb (141 kg)
TRH With Tray Rations and Water	560 lb (193 kg)
DIMENSIONS:	
Height	25.5 in (64.7 cm)
Length	53.0 in (134.6 cm)
Width	23.0 in (58.4 cm)
CAPACITY	
Water	30 gal
Tray Rations	24
FUEL CONSUMPTION:	
Rate of fuel consumption:	
Operating continuously at maximum firing rate:	0.5 gal (1.89 L)/hr
TRH continuous operation (5 gallon fuel tank)	10 hr
FUEL REQUIREMENTS	JP-8, JP-5, DFA, Kerosene
ELECTRICAL REQUIREMENTS	120 VAC
ENVIRONMENTAL:	
Operating temperatures	–25 to +125 °F (–32 to +52 °C)

Table 2. TRH Inverter.

ELECTRICAL CHARACTERISTICS:	
Output Power.	300 W
Output Voltage.	120 VAC, 60 Hz
Input Voltage	24 VDC
WEIGHT.	15.7 lb

EQUIPMENT DATA FOR ASSAULT KITCHEN COMPONENTS – CONTINUED

Table 3. Modern Burner Unit (MBU).

WEIGHT:	
MBU-V3 Fully fueled	60 lb (27.2 kg)
MBU-V3 Without fuel	42 lb (19.1 kg)
DIMENSIONS:	
Height	9.75 in (25 cm)
Depth	19 in (48 cm)
Width	23 in (58 cm)
FUEL CAPACITY (Usable)	2 US gal (7.6 L)
INPUT CONNECTORS:	
Fuel	Parker Double Shut-off Coupling, BH2-60Y
FUEL CONSUMPTION:	
Rate of fuel consumption:	
Operating at maximum firing rate:	0.34 gal (1.29 L)/hr
Operating at minimum firing rate:	0.1 gal (0.38 L)/hr
MBU-V3 continuous operation (full fuel tank) (setting dependent)	6 to 20 hr
OUTPUTS:	
MBU-V3 Heat (setting dependent)	15,000 to 52,000 BTU/hr
Carbon monoxide (setting dependent)	50 to 120 ppm
FUEL REQUIREMENTS	JP-8
ELECTRICAL REQUIREMENTS	22 to 29.5 VDC
ENVIRONMENTAL:	
Operating temperatures	–25 to +125 °F (–32 to +52 °C)
Operating elevations to 14,000 ft above sea level	

Table 4. AK Tool Box.

CONTENTS:	
Brush, Wire	1
Cargo Straps (14')	5
Extension, Socket Wrench	1
Hammer, Hand (3 lb)	1
Handle, Socket Wrench (3/8 in)	1
Key Set, Socket Head Screw	1
Knife, Utility	1
Nut Driver (7/16")	1
Pliers, Needle Nose	1
Pliers, Slip Joint	1
Screwdriver, Cross Tip	1
Screwdriver, Flat Tip	1
Socket, (7/16")	1
Socket, (9/16")	1
Tool Box (AK Tool Box)	1
Wrench, Adjustable	1
Wrench, Open End (9/16")	1

EQUIPMENT DATA FOR ASSAULT KITCHEN COMPONENTS – CONTINUED

Table 5. AK Utensil Box.

CONTENTS:

Bar, Divider, IFC	5
Cooks Knife	1
Dipper, Kitchen	1
Egg Whip	1
Food Serving Tongs (9 in)	6
Gloves, Chemical and Oil Protective	4
Food Turner	2
Kitchen Ladle, 4 oz	1
Kitchen Ladle, 6 oz	1
Knife, Boning	1
Metal Cutting Shears, 9.25 in lg	1
Mounted Can Opener, (with base)	1
Mounted Can Opener Blade	2
Portable Tool Box	1
Sharpening Stone	1
Spoon, Slotted Food Service (15 in)	5
Spoon, Solid Food Service (13 in)	7
Thermometer, Bimetallic Self-Indicating	4

Table 6. Burner Maintenance Kit.

CONTENTS:

Air Solenoid	1
Cable Assembly, Electrical Power	1
Cable Assembly, Electrical Special Purpose	1
Chamber, Atomizing	1
Control, Flame Safeguard	1
Coupling, Rigid Shaft	1
Filter Element, Fluid	1
Filter Element, Intake Air Cleaner	1
Fuel Solenoid	1
Gage, Pressure, Dial Indicating	2
Gage, Vacuum, Indicating	1
Gauge, Extensions	2
Hardware Kit, Mechanic Equipment	1
Igniter, Fuel Spark	1
Maintenance Kit, Stainless Steel (with tray)	1
Multi-Fuel Burner (Airtronic Burner)	1
O-Rings Set	1
Parts Kit, Compressor Piston Assembly	1
Pump, Fuel Electrical	1
Screwdriver, Cross Tip	1
Screwdriver, Flat Tip (1/8-inch)	1
Screwdriver, Flat Tip (3/16-inch)	1
Semiconductor Device, Photo	1
Test Set, Control	1
Transformer, Ignition	1
Wrench, Combination Box And Open End (10 mm)	1
Wrench, Combination Box And Open End (11 mm)	1
Wrench, Combination Box And Open End (5/8 in)	1

EQUIPMENT DATA FOR ASSAULT KITCHEN COMPONENTS – CONTINUED

Table 7. Insulated Beverage Dispenser.

DIMENSIONS:	
Height	24.3 in (62 cm)
Depth	16.6 in (42 cm)
Width	9 in (23 cm)
CAPACITY	
Volume	4.75 gal (18 L)
WEIGHT	15 lb (empty) / 50 lb (full)

Table 8. Side Loading Pan Carrier.

DIMENSIONS:	
Height	25 in (63.5 cm)
Depth	18.2 in (45.7 cm)
Width	25.8 in (65.5 cm)
CAPACITY	
Volume	60 qt (57 L)
Tray Rations	16
WEIGHT	32 lb (empty) / 140 lb (full)

Table 9. Insulated Food Container.

DIMENSIONS:	
Height	8.2 in (20.8 cm)
Depth	17.5 in (44.5 cm)
Width	24.8 in (63 cm)
CAPACITY	
Volume	20 qt (19 L)
Tray Rations	4
WEIGHT	26 lb (empty) / 44 lb (full)

Table 10. MBU Accessories.

CONTENTS:	
2-Branch MBU Cable	1
25-foot Power Cable w/ NATO plug	1
Extension Cord Assy 50’ with carabiners	1
Fuel Can Adapter	1
Fuel Spout	1
Storage Box	1
WEIGHT	15 lb

EQUIPMENT DATA FOR ASSAULT KITCHEN COMPONENTS – CONTINUED

Table 11. M59A Field Range and Outfit.

CONTENTS:

M59A Field Range Assembly includes the following: 1
- Butcher's Steel, Type X 1
- Cover, Baking and Roasting Pan 1
- Cover, Cook Pot 1
- Cradle, Cook Pot 1
- Dipper, Type II, Size I 2
- Field Range Outfit 1
- Fork, Food, Type I, Style I, Size I 2
- Knife, Boning, Type III, Style A 2
- Knife, Cooks, Type IV 2
- Knife, Paring, Type V 2
- Ladle, Size 2 1
- Ladle, Size 3 1
- Measuring Set 2
- Oven, Bake Rack, M59A 2
- Pan, Baking and Roasting, Deep 1
- Pan, Rectangular 2
- Peelers, Potato, Hand 2
- Pot, Cooking, 10 Gallon 1
- Pot, Cooking, 15 Gallon with cover 1
- Protector, Arm, Long 1
- Protector, Arm, Short 1
- Turner, Food, Type I, Style A 1
- Rack, Bottom 1
- Scraper, Bakers 1
- Spoon, Basting, Type II, Style I, Size 3 2
- Spoon, Food Service, Slotted Type II, Size 2 1
- Skimmer, Kitchen 1
- Warmer, Adapter, Type II 1
- Whip, Egg 1

WEIGHT ..... 295 lb

Table 12. Griddle Assembly.

CONTENTS:

- Griddle 1
- Base, Griddle 1

Table 13. Cooking Pot Cradle Assembly.

CONTENTS:

Cradle Assembly, Cooking Pot includes the following: 1
- Cradle, Cooking Pot 1
- Rack, Burner 1
- Rack, Base 1

END OF WORK PACKAGE

THEORY OF OPERATION

The Assault Kitchen is a food service system consisting of the Tray Ration Heater, Modern Burner Unit, M59A Field Range, cooking pot cradle assembly and griddle assembly, power inverter, and supporting food service equipment.

Heat on the Move Capabilities

The Assault Kitchen was developed to provide hot tray ration meals to personnel in remote locations. When installed on an M1101 or M1102 Light Tactical Trailer (LTT), the Assault Kitchen can heat tray rations in transit to serve 250 tray ration meals in one location with a combined capability to serve 500 tray ration meals in one day. Upon arrival at the serving location, the Assault Kitchen can then be set-up and begin to serve meals.

Static Configuration

The AK can be deployed in a static configuration that is used when the unit using the AK will be in place for an extended period of time. The static configuration allows the unit to remove the AK from the HMMWV and trailer and employ the AK and serving line while sheltered. The AK can be installed in a variety of shelter types including tents, buildings, or temporary shelters. When in static configuration, the AK components may be powered using generators or local power supply instead of vehicle power.

Tray Ration Heater (TRH)

The AK in the static configuration is capable of heating 250 Unitized Group Rations (UGR) heat and serve, or 150 limited UGR A ration menus. The TRH consists of a stainless steel water tank and multi-fuel burner that operates from a 5 gallon fuel container fuel source. The TRH maintains water temperature between 180 and 200 °F for up to 10 hours and can heat 24 tray packs in approximately 1 hour. The TRH can draw electrical power from a HMMWV, using an inverter assembly, or it can be plugged in to any 120 VAC, 60 Hz power source.

There are safety features on the TRH that prevent it from operating unless certain operating conditions are met. The low water sensor, located inside the water tank, will not allow burner function unless the water level is sufficient. The tilt switch, inside the electrical control box, will shut down the burner in the case of accidental tip over or excessive tilt. The thermal resistor, which is located next to the low water sensor; ensures proper water temperature between 180 and 200 °F for ration heating. A circuit breaker on the electrical control box resets power after an automatic safety shutdown.

The TRH burner has three safety features as well. A photocell inside the burner housing ensures proof of flame, which will turn off the igniter once a flame is detected inside the burner tube. The photocell also acts as a monitor in the event the burner flames out; the photocell will allow the igniter to restart the burner. The burner also has a sump that is constantly monitored by an overflow safety device, which will shut off the inlet fuel solenoid until the fuel level recedes to the proper operating level. The TRH burner control box also has a relay safety feature that disables the control box when an unsafe operating condition is detected.

Modern Burner Unit (MBU)

The MBU is a small, lightweight heating unit that operates from its own fuel source. The MBU can provide 15,000 to 52,000 BTUs for 4 to 20 hours depending on firing rate setting. Refer to TM 10-7310-281-13&P; Operator's, Unit, and Direct Support Maintenance Manual, Including Repair Parts and Special Tools List (RPSTL) for Modern Burner Unit (MBU-V3) NSN 7310-01-507-9310 for Maintenance Procedures.

THEORY OF OPERATION – CONTINUED

Food Service Components

The Assault Kitchen contains components for handling and serving of tray rations and beverages. When the Assault Kitchen arrives at a feeding location the folding tables are removed, unfolded and set up to establish a serving line for food service. Hot tray packs are removed from the TRH or insulated pan carriers, opened and served. As hot tray packs are removed from the TRH, they are replaced with new tray rations, which will then be ready to serve at the next feeding location. Upon completion of food service, tables and equipment are stored on the vehicle and secured for travel.

TRH Burner Operation

The TRH burner employs a unique fuel atomization technique to achieve high-efficiency, reliable, smokeless operation. The atomization principle is shown in Figure 1. Fuel is supplied to the exterior surface of a hollow convex atomizer; fuel spreads out and covers the entire atomizing surface with a continuous thin film. The atomizer surface contains a small, laser-cut hole. When compressed air escapes through this small orifice, it ruptures the portion of the thin film that flows over the exterior surface of the atomizer. This creates a continual dispersion of liquid particles that are as much as 10 times smaller than those produced by a conventional burner. The portion of the fuel not turned into a fine mist by the escaping air drains into a sump where it is recirculated back to the fuel supply system. This makes the TRH burner insensitive to contamination, even if the fuel contains water, dirt, or other particulate matter.

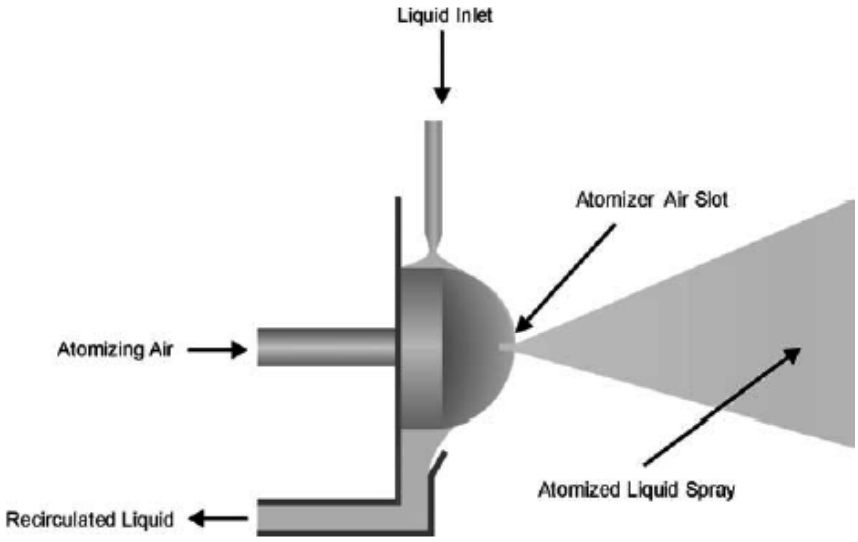


Figure 1. Atomization Principle.

The TRH burner has two atomizers mounted in the atomizing chamber. The amount of fuel being converted into a mist is controlled by the Fuel Flow Control screw, this regulates the thickness of fuel covering the atomizers, the thicker the coating of fuel, the more mist is made. The two mist sprays converge in the flame tube to create a swirling flame with excellent combustion stability.

THEORY OF OPERATION – CONTINUED

A blower fan that is controlled by the Combustion Air Control knob provides the combustion air. This air mixes with the fuel mist to provide the additional air required for complete burning of the fuel. It is important to maintain a proper balance of fuel mist and this combustion air for proper operation.

Ignition is achieved with a compact, low-energy, solid-state ignition transformer that is located inside the TRH burner housing.

Safety devices are incorporated into the TRH burner by use of a Primary Control Box. The control box uses information collected from an attached photocell to determine if the TRH burner is performing properly. The control box controls startup and automatically stops the TRH burner if any of the following cases occur; failure to start properly, flame failure while running, or problems with the control system on the TRH burner.

TRH Tank Safety Features

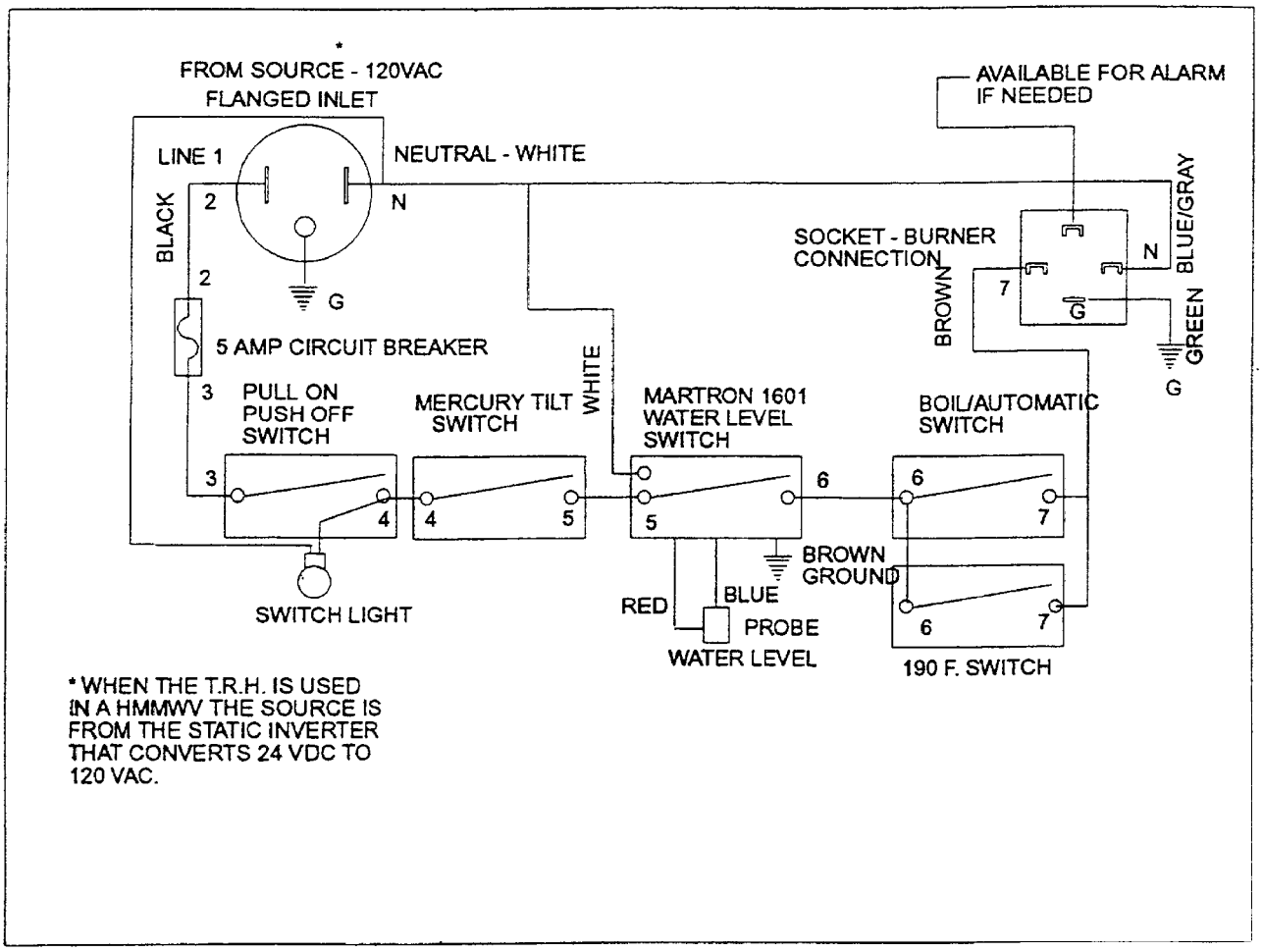


Figure 2. TRH Tank Electrical Control Box Schematic.

THEORY OF OPERATION – CONTINUED

Both the TRH Tank and TRH burner have their own unique safety features. The components listed below break the power supply to the TRH burner as shown schematically in Figure 2. These components must be functioning properly before the TRH burner will ignite.

- Circuit breaker on the TRH Tank electrical control box.
- Tilt switch to shut down the TRH burner in the case of accidental tip over or excessive tilt.
- Water level sensor to ensure TRH burner will not fire without sufficient water in the TRH Tank.
- Thermal resistor to regulate water temperature.
- Red, Pull-on/Push-off switch and AUTO/BOIL toggle switch.

When the TRH Tank safety features listed above are functional, the TRH burner will operate under its own safety and control features, as listed below.

TRH Burner Control Box. Should the TRH burner go into lockout, it must be manually reset by pushing the button on the back of the TRH Burner Control Box. This button has a red light indicator for lockout. After a two-minute wait, reset the TRH Burner Control Box by depressing the button and the red light will go out.

Photocell. The TRH burner photocell must “see” dark prior to light-off. This ensures it is properly installed in the TRH Tank, without light leakage. During startup, the TRH burner photocell must “see” light to establish proof of flame within ten seconds or the TRH burner will go into lockout. After proof of flame is established, the ignition spark will turn off. This increases igniter and ignition transformer life. TRH burner constantly monitors flame to confirm proof of flame. In the event the TRH burner flames out for any reason, it will automatically relight within ten seconds. If “proof of flame” is not reestablished after ten seconds during relight trial, the TRH burner control goes into lockout.

Overflow Safety Float Switch. The fuel level in the TRH burner sump is constantly monitored; if the level rises too high for any reason, the overflow safety float will shut off the inlet fuel solenoid until the fuel level recedes to proper operating level.

END OF WORK PACKAGE

CHAPTER 2

OPERATOR INSTRUCTIONS
FOR
ASSAULT KITCHEN

OPERATOR MAINTENANCE

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS

INTRODUCTION

This work package provides the descriptions and location of the Assault Kitchen (AK) controls and indicators. Personnel operating and maintaining the AK should know the location and proper use of every control and indicator. The following illustrations show the locations of the controls and indicators on the AK as well as providing references for associated equipment.

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS

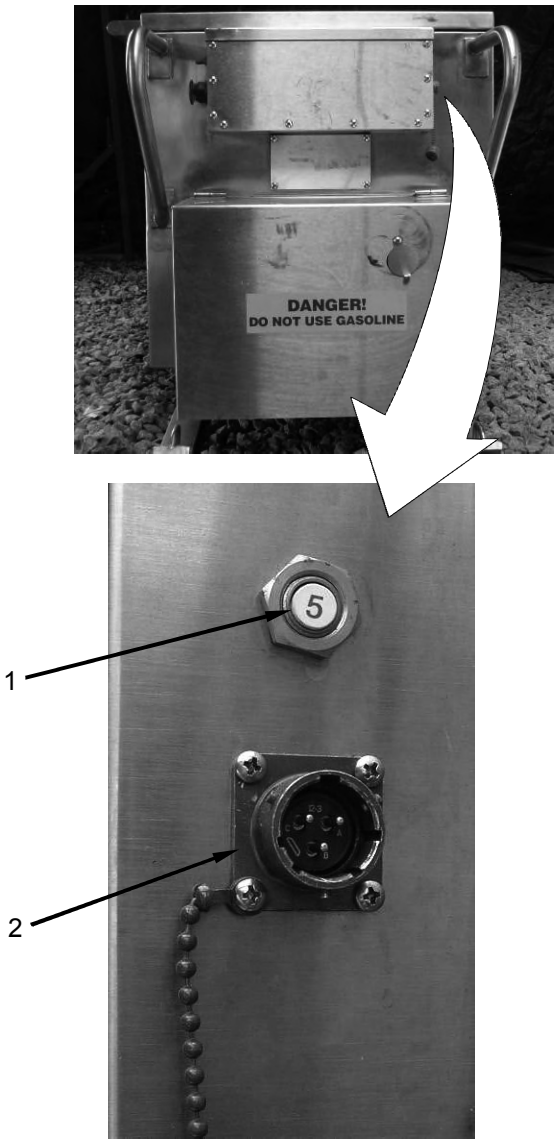


Figure 1. Tray Ration Heater Electrical Control Box (Driver Side).

Item	Function
1. Circuit Breaker	Circuit breaker protects TRH from damage caused by an overload or short circuit.
2. Power Receptacle	Connects TRH to power inverter.

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS – CONTINUED

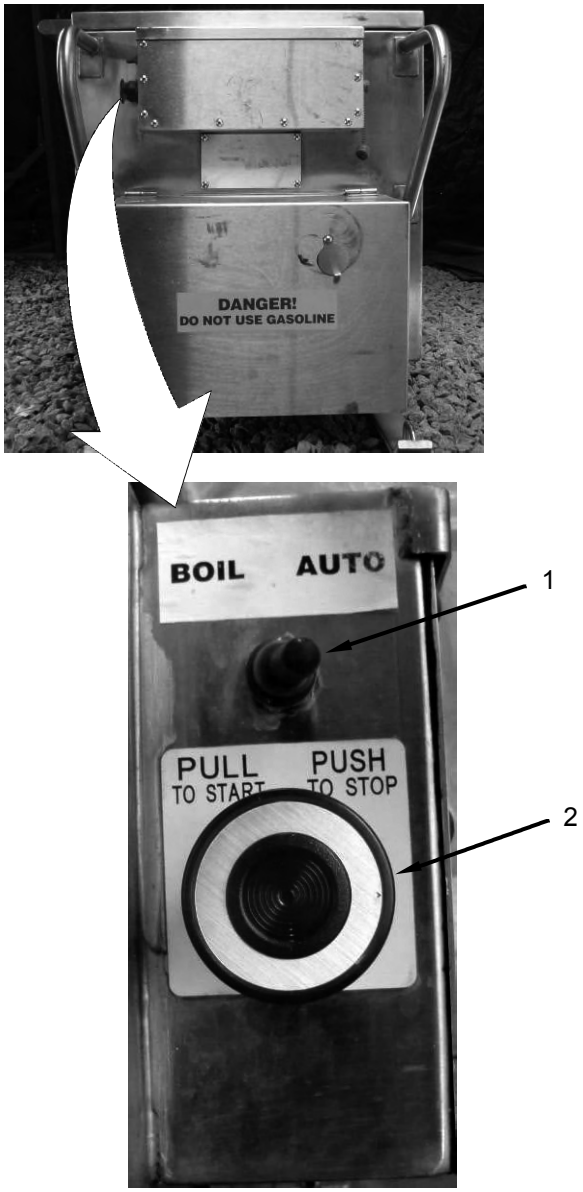


Figure 2. Tray Ration Heater Electrical Control Box (Passenger Side).

Item	Function
1. Auto/Boil Toggle Switch	Selects TRH operation mode.
2. Pull-On/Push-Off Switch	Controls power to TRH.

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS – CONTINUED

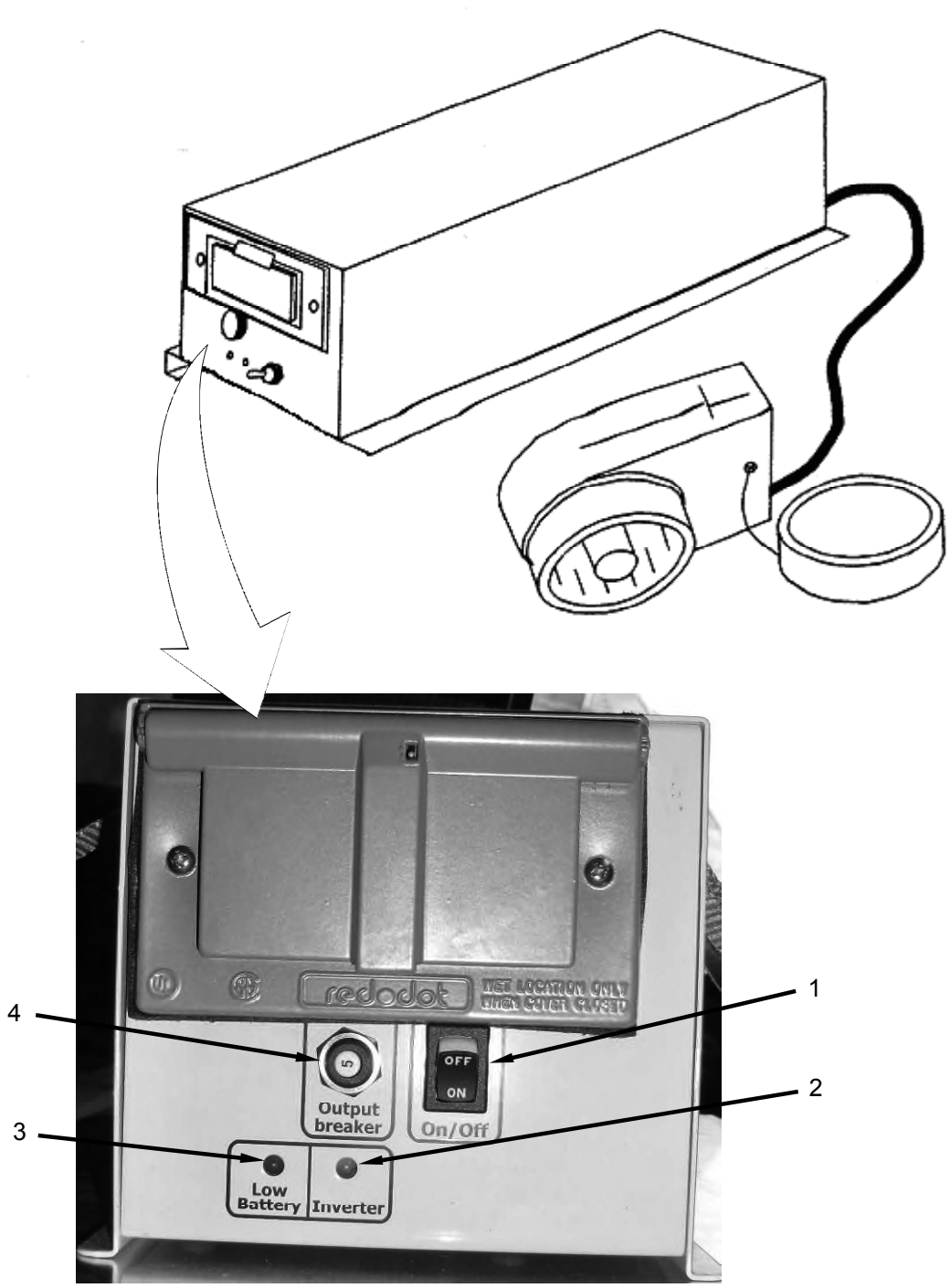


Figure 3. Inverter Assembly.

Item	Function
1. Power Switch	Controls power to TRH.
2. Green LED	Indicates proper power from NATO slave receptacle.
3. Red LED	Indicates that vehicle battery is low.
4. Circuit Breaker	Restores power to inverter after overload.

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS – CONTINUED

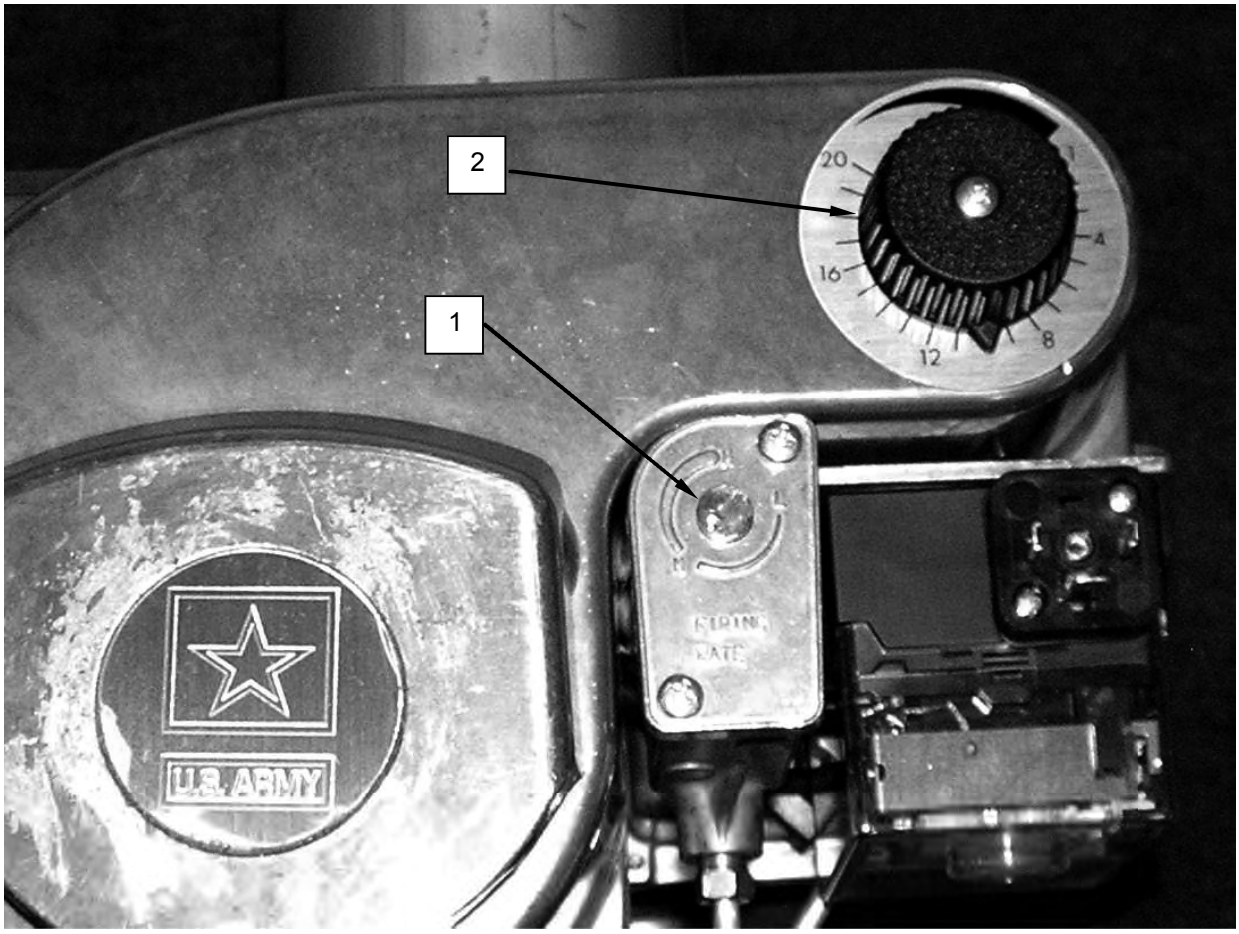


Figure 4. TRH Burner Assembly.

Item	Function
1. Fuel Flow Control	Controls burner fuel flow (should be set to M).
2. Combustion Air Control	Controls burner air flow (should be set to 10).

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS – CONTINUED

Figure 5. TRH Burner Control Box.

Item	Function
1. TRH Control Box Reset	Resets the TRH control box after lockout.

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS – CONTINUED

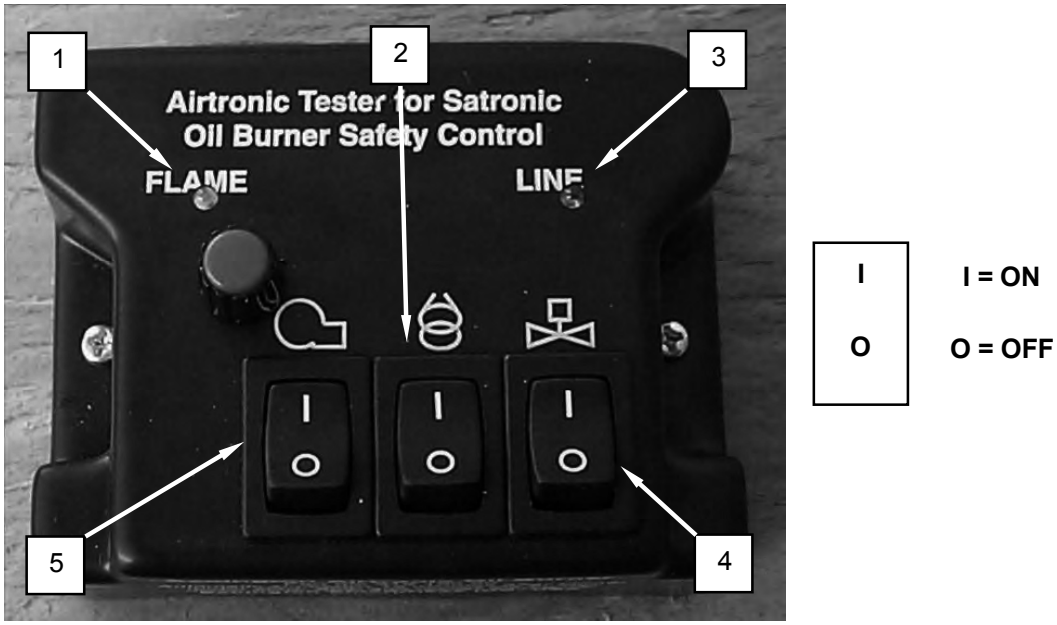


Figure 6. Burner Test Box.

Item	Function
1. Red Flame LED	Indicates flame is present.
2. Ignition Test Switch	Controls ignition spark.
3. Amber Line LED	Indicates power to burner test box.
4. Air Solenoid Test Switch	Controls air solenoid.
5. Blower Motor Test Switch	Controls blower motor.

END OF WORK PACKAGE

OPERATOR MAINTENANCE

OPERATION UNDER USUAL CONDITIONS

INITIAL SETUP:

Tools and Special Tools

Maintenance Kit (WP 0069, Item 1)
AK Tool Box (WP 0069, Item 3)

Personnel Required

Food Service Specialist 92G (2)
Unspecified MOS (2)

Materials/Parts

Bag, Plastic (WP 0068, Item 2)

Equipment Condition

All equipment shall be serviceable and ready for use.

References

FM 4-25.11
TM 10-7310-281-13&P
TM 10-7360-204-13&P
TM 9-2330-392-14&P
WP 0014
WP 0016

GENERAL

This WP covers service-specific planning, setup, operation, and teardown of AK field feeding operations.

ASSEMBLY AND PREPARATION FOR USE

Mission Preparation – Static Configuration

Before preparing the AK for service in a static configuration, determine the requirements of the mission. Mission requirements will dictate the number of tray packs, #10 cans, and beverages that will need to be used with the system.

1. Ensure fuel can is full.

2. Determine the number of tray-packs, #10 cans, and beverages or UGR menus needed for the mission.

3. Prepare warm beverages in available kitchen support equipment. Store beverages in Insulated Beverage Dispensers (IBDs). Store IBDs in Light Tactical Trailer (LTT) IAW WP 0014.

WARNING

Do not put milk or milk-type products into Insulated Beverage Dispenser. Milk products need to be stored at consistently cold temperatures to retard spoilage. Consuming milk products not maintained at appropriate temperatures may result in illness or death.

4. Mix cold beverages and store in IBDs when completed. Secure IBDs in LTT IAW WP 0014.

5. Fill water cans, fuel cans, and ice storage chest with enough supplies for the next ration meal.

END OF TASK

ASSEMBLY AND PREPARATION FOR USE – CONTINUED

Mission Preparation – Mobile Configuration

Before preparing the AK for service, determine the requirements of the mission. Mission requirements will dictate the number of tray packs, #10 cans, and beverages that will need to be taken with the system.

Prepare the AK at a secure support location by completing the following tasks before heading to the feeding site:

1. Ensure fuel can is full, and check to ensure fuel line connection from fuel can to Tray Ration Heater (TRH) is secure.

2. Prepare initial batch of rations by loading TRH with tray packs, then add water so that the water level is approximately 1-1/2" below the top of the tray packs. Initial batch of rations may take up to 60 – 75 minutes to heat to serving temperature. Additional batches may take up to 45 minutes to heat.

3. Prepare warming beverages in available kitchen support equipment. Store beverages in insulated beverage dispensers when completed. Secure beverage dispensers in AK.

WARNING

Do not put milk or milk-type products into Insulated Beverage Dispenser. Milk products need to be stored at consistently cold temperatures to retard spoilage. Consuming milk products not maintained at appropriate temperatures may result in illness or death.

4. Mix cold beverages and store in insulated beverage dispensers when completed. Secure beverage dispensers in AK.

5. Fill water cans, fuel can, and ice storage chest with enough supplies for the proposed mission.

WARNING

The tray rack and heated tray rations are hot. Wear protective gloves when handling hot tray packs, #10 cans, and UGR rations. Exercise care when opening the lid of the tray ration heater. Placing hands into water, even when protected with gloves, could result in injury to personnel.

6. Remove hot tray packs from the TRH and store in the side loading pan carriers.

7. Load TRH with new batch of tray packs before departing.

END OF TASK

INITIAL ADJUSTMENTS, BEFORE USE AND SELF-TEST

The following checks should be performed before initial use, after removing equipment from storage, and as required by the unit commander to ensure the TRH and other AK components are in suitable operational condition.

TRH and MBU Operational Check-Out List

Date: _____ TRH Tank SN: _____

TRH Burner #1 SN: _____ TRH Burner #2 SN:_____

TRH Inverter SN: _____ MBU SN: _____

Trailer SN: _____

TRH Burner

1. Inspect Burners (both primary and spare) for serviceability. Ensure no parts are damaged or missing.

TRH Tank

1. Inspect TRH for serviceability. Ensure no parts are damaged or missing.
2. Inspect TRH fuel can adapter and fuel line for serviceability. Ensure no parts are damaged or missing.

Inverter Assembly

1. Inspect Inverter for serviceability. Ensure no parts are damaged or missing.
2. Inspect Inverter NATO slave cable and connector for serviceability. Ensure no parts are damaged or missing.
3. Inspect the Inverter TRH power cable for serviceability. Ensure no parts are missing.

AK Operational Check

1. Fill TRH Tank with water (at least 15 gallons) until water level is above the level sensor.
2. Close TRH Tank lid and secure latches.
3. With the primary TRH Burner installed in the TRH, connect the fuel line and the power line.
4. Mount the fuel can adapter on to a full can of fuel and connect the adapter line to the TRH.
5. Connect the TRH Inverter to a 24 VDC power source. Connect the Inverter output to the TRH.
6. Make proper primary TRH Burner fuel and air settings, and prime TRH Burner if necessary.
7. Place TRH Tank Control Box switch in the “AUTO” position.
8. Pull the TRH red pull-on/push-off switch to the “ON” position.
9. Observe the TRH for 5 - 10 minutes to ensure the primary TRH Burner is functioning properly (water temp has increased to at least 120 F).
10. Turn off the TRH, remove the primary TRH Burner, and install the spare TRH Burner.

INITIAL ADJUSTMENTS, BEFORE USE AND SELF-TEST – CONTINUED

11. Drain the primary TRH Burner completely, and place it in the bottom of the Burner Maintenance Kit.

12. Perform steps 1 through 8 using the spare TRH Burner.

13. Allow TRH water to heat to 180 - 200 degrees F (approx. 30 minutes total). Spare TRH Burner should turn off within this range.

14. Leave the spare TRH Burner installed in the TRH Tank.

Modern Burner Unit (MBU)

1. Inspect the MBU for serviceability. Ensure no parts are damaged or missing.

2. Inspect TRH fuel can adapter and fuel line for serviceability. Ensure no parts are damaged or missing.

MBU Operational Check

1. Using the provided MBU cables, connect the MBU to the HMMWV 24 VDC slave connector.

2. Mount the fuel can adapter on to a full can of fuel and connect the adapter fuel line to the MBU.

3. Auto-fuel the MBU. MBU should complete auto-fueling in less than 4 minutes.

4. Start and observe the MBU for 5 minutes to ensure it is functioning properly.

5. Let cool, then manually drain MBU fuel back into the fuel can.

END OF TASK

OPERATING PROCEDURES

Folding Tables

1. Loosen straps and remove tables from LTT.

WARNING

The process of unfolding legs, adjusting leg height and locking legs into position has the potential to pinch skin. Be aware of where your hands and fingers are during this operation.

2. Unfold legs, and lock into place by moving sleeve (Figure 1, Item 1) over leg brace (Figure 1, Item 2) hinge.

3. Adjust folding tables to proper serving height by pressing in leg button (Figure 1, Item 3) while sliding table leg to desired height.

4. Set up folding tables in desired feeding configuration (Figure 1, Item 4).

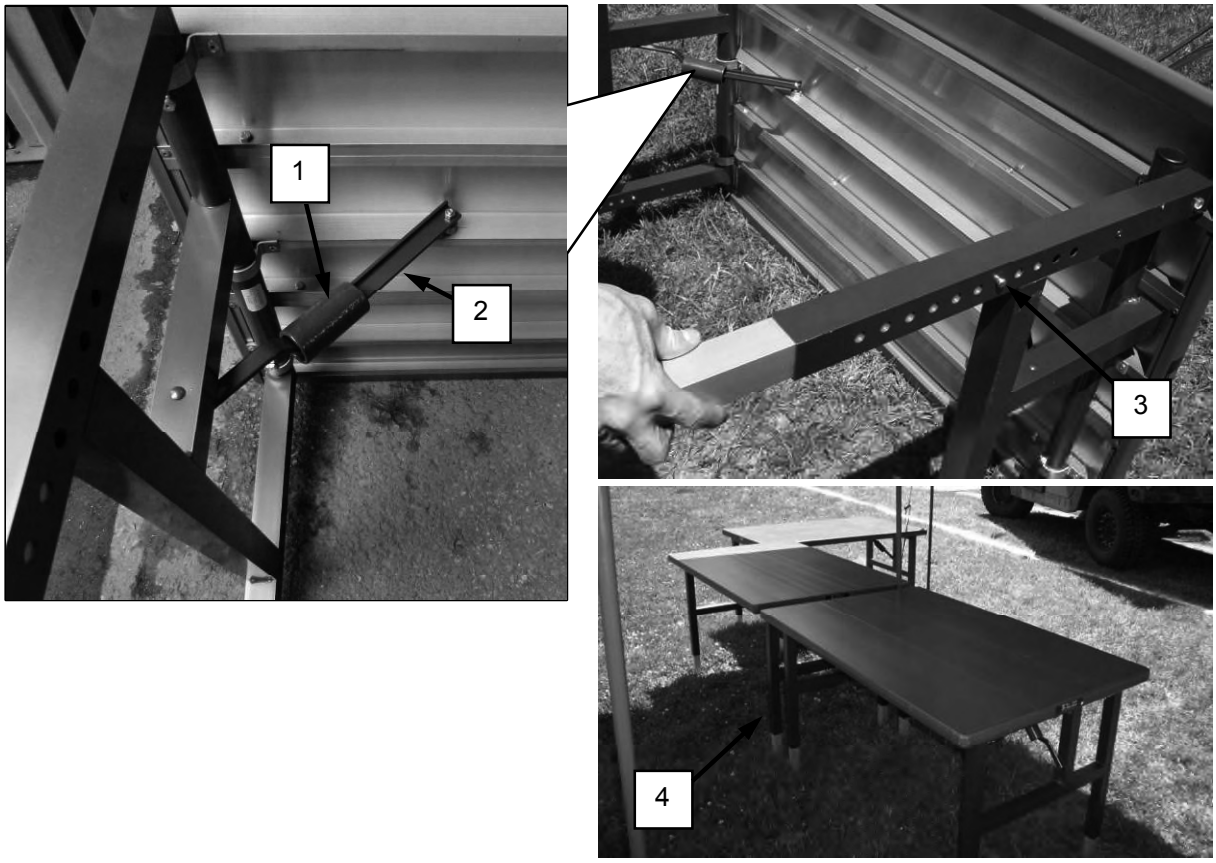


Figure 1. Folding Table Setup and Placement.

END OF TASK

OPERATING PROCEDURES – CONTINUED

Insulated Food Carrier (IFC)

1. Loosen straps to remove the IFCs necessary for feeding (Figure 2, Item 1).

2. Place IFCs on folding tables for feeding (Figure 2, Item 2).

WARNING

The tray rack and heated tray rations are hot. Wear protective gloves when handling hot tray packs, #10 cans, and UGR rations. Exercise care when opening the lid of the tray ration heater. Placing hands into water, even when protected with gloves, could result in injury to personnel.

3. Load IFCs with hot rations from TRH or side loading pan carrier.

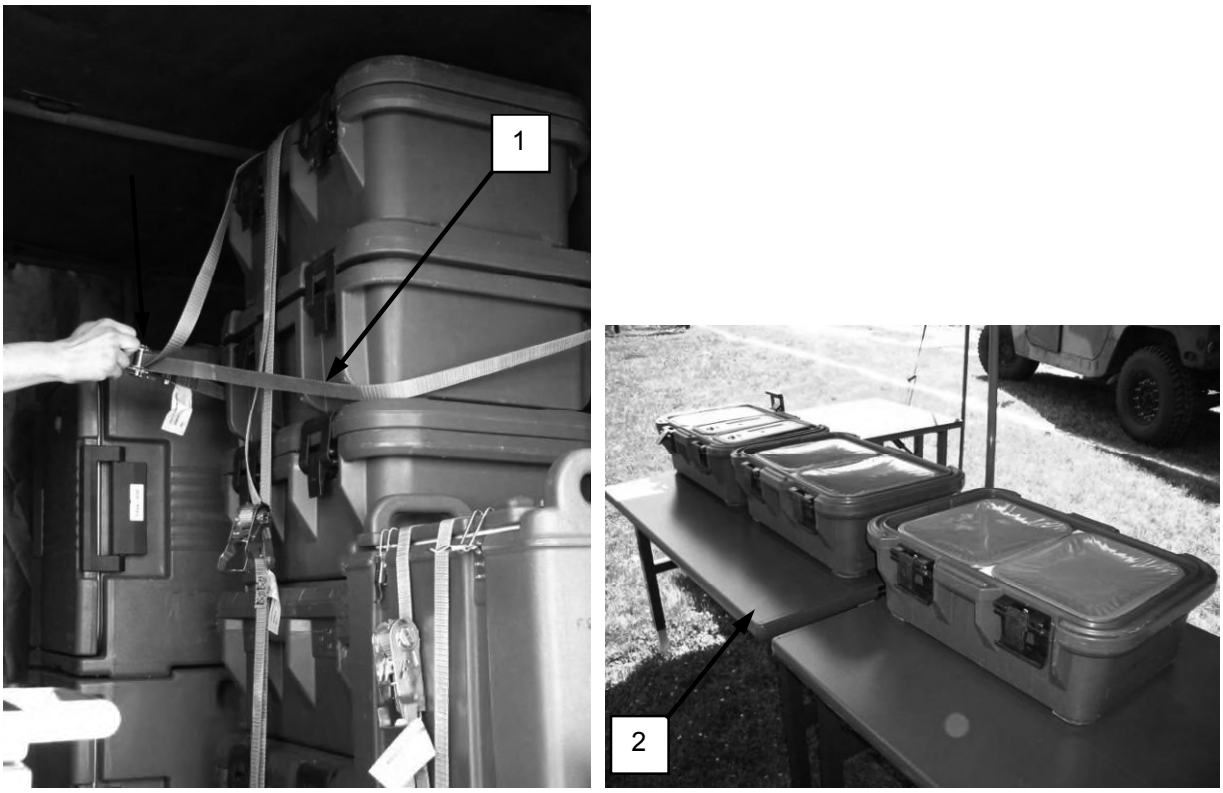


Figure 2. IFC Placement.

END OF TASK

OPERATING PROCEDURES – CONTINUED

Serving Utensil Kit

1. Remove elastic strap (Figure 3, Item 1) securing serving utensil box (Figure 3, Item 2) to LTT floor.
2. Remove serving utensil box from LTT and place near serving line.
3. Remove necessary utensils from utensil box.

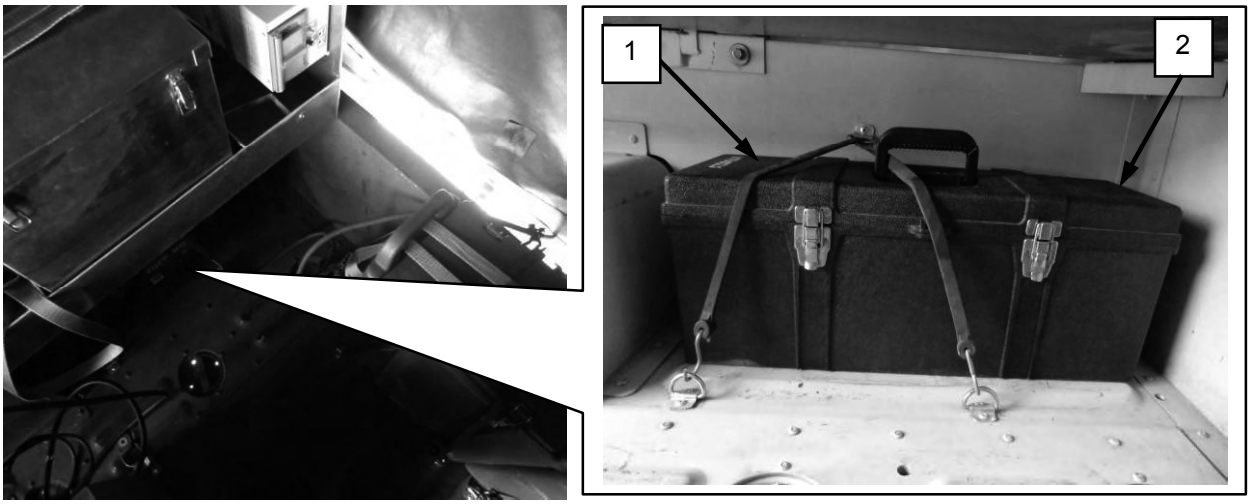


Figure 3. Utensil Box Location.

END OF TASK

Can Opener

1. If necessary, attach can opener base (Figure 4, Item 2) to folding table.
2. Slide can opener rail (Figure 4, Item 1) into can opener base (Figure 4, Item 2).

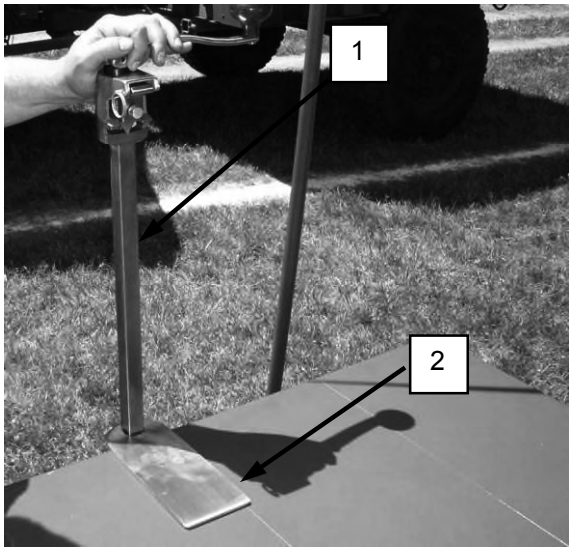


Figure 4. Can Opener Base and Rail Placement.

END OF TASK

OPERATING PROCEDURES – CONTINUED

Insulated Beverage Dispenser (IBD)

1. Loosen straps or bungee cords from IBDs so that they can be removed from vehicle.
2. Remove IBDs necessary for serving, and set them up on serving table (Figure 5, Item 1).

Figure 5. Can Opener and Beverage Dispensers Placement.

END OF TASK

OPERATING PROCEDURES – CONTINUED

Cooking Pot Assembly, Griddle Assembly and M59A Field Range with Modern Burner Unit (MBU)

WARNING

During operation, the MBU produces harmful carbon monoxide (CO) and other gases. Carbon monoxide is a colorless, odorless, and tasteless gas. Mild cases of CO poisoning can cause symptoms such as nausea, dizziness or headaches. Severe cases of carbon monoxide poisoning can result in brain damage, heart damage or death. Remember that although CO has no distinctive odor, it may mix with other odors that mask its presence; therefore, CO can be present within a mix of seemingly harmless odors. To prevent CO poisoning, ensure that the MBU operating spaces are well ventilated during burner operation.

NOTE

Mission requirements will dictate the inclusion of a cooking pot assembly, griddle assembly and/or M59A field range.

1. Unclip carabiner securing power cord to tailgate.
2. Lower tailgate to facilitate removal of cooking pot cradle assembly components.
3. Loosen cargo strap to remove cooking pot cradle assembly components (Figure 6, Item 1).
4. Remove cooking pots from cooking pot cradle and remove cradle from base and burner rack.

Figure 6. Cooking Pot Cradle Removal.

OPERATING PROCEDURES – CONTINUED

WARNING

Operate the MBU at least 10 feet away from vehicles. Failure to observe this warning may result in injury or death.

5. Remove base rack (Figure 7, Item 3) and place on level site which is clear of obstacles this is at least 10 feet from HMMWV.
6. Remove MBU (Figure 7, Item 1) from burner rack (Figure 7, Item 2) and set aside.
7. Remove MBU burner rack and place on top of base rack.
8. Place MBU in burner rack with the controls facing out.

Figure 7. Cooking Pot Assembly Placement.

OPERATING PROCEDURES – CONTINUED

WARNING

The Griddle Base must be installed so that heat vents are facing away from cook or server to prevent severe burns.

9. Place cooking pot cradle (Figure 8, Item 4) or griddle adapter (Figure 8, Item 3) on top of burner rack.

10. Place 10 or 15 gallon cooking pot (Figure 8, Item 1) in cooking pot cradle or place griddle (Figure 8, Item 2) in griddle adapter (Figure 8, Item 3).

11. Refer to TM 10-7310-281-13&P for connection and operation of MBU.

Figure 8. Cooking Pot Assembly and Griddle Assembly Placement.

WARNING

The weight of the M59A without accessories, cooking pots, and MBU stowed inside is 114 pounds (51.8 kg). It must be kept upright during movement. Four persons must carry the Field Range, lifting with legs, not back, to prevent injury to personnel. Failure to observe this warning may result in injury to personnel.

12. Install the M59A on a level site, clear of obstacles.

13. Refer to TM 10-7360-204-13&P for preparation and use of M59A field range.

END OF TASK

OPERATING PROCEDURES – CONTINUED

Ration Serving

Remove hot tray rations from Side Loading Pan Carrier (SLPC) or TRH and place in IFCs that are set up on the serving line. Open tray packs and/or #10 cans and place appropriate serving utensil with each tray.

END OF TASK

Equipment Breakdown and Stowage

WARNING

Food waste and food preparation components should never be kept in the same area. Never use the AK to transport discarded tray rations. Failure to observe warnings may lead to bacterial contamination of food service equipment resulting in severe illness or even death.

NOTE

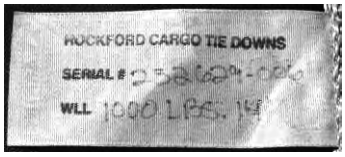
Refer to WP 0013 for configurations and appropriate methods of securing equipment for travel.

1. Discard open tray packs and disposable mess gear. Do not use the AK to transport or store waste.
2. Clean serving utensils IAW WP 0016. Repack serving utensils in utensil box and replace in vehicle.
3. Clean tables IAW WP 0016.
4. Clean cooking pot, griddle and/or M59A IAW WP 0016.
5. Place IFCs and beverage dispensers in vehicle.
6. Place tables in vehicle.
7. Repack any remaining unopened tray packs and place in vehicle.
8. Disconnect MBU and place in vehicle
9. Place cooking pot assembly, griddle assembly, and/or M59A in vehicle.

END OF TASK

DECALS AND INSTRUCTION PLATES

Table 1. Decals and Instruction Plates.

Decal	Description and Location
	Data on the reverse side of tag attached to 14 ft cargo strap.
	Warning label on the TRH water tank.
	Data tag on the fuel can adapter bag.
	Data plate on the power inverter.
	Warning label on the base of the burner compartment.

DECALS AND INSTRUCTION PLATES – CONTINUED

Table 1. Decals and Instruction Plates. – Continued.

Decal	Description and Location
	Warning label on the side of the water tank, under lid opening.
	Warning label on the exhaust end of the TRH tank, underneath TRH carrying handle.
	Caution label below lid latch on side of TRH tank, below tank lid.
	Warning label on the TRH tank lid.
	Warning label below pressure release port on side of TRH tank, below tank lid.
	Warning label below lid latch on side of TRH tank, below tank lid.
	Maintenance kit sticker.

DECALS AND INSTRUCTION PLATES – CONTINUED

Table 1. Decals and Instruction Plates. – Continued.

Decal	Description and Location
	IUID Assault Kitchen.
	IUID Tray Ration Heater.
	Cooking pot cradle warning label.
	M59A instructional plate.
	M59A warning plate.
	Warning label below lid next to exhaust deflector on TRH tank.

PREPARATION FOR MOVEMENT

Assault Kitchen Trailer Storage

The following procedures are for the storage of AK components in the Light Tactical Trailer (LTT). All components of the AK may be stored in the LTT when the AK and LTT are not in use. The LTT loaded with all components of the AK exceeds the weight limit of the LTT pintle; in this configuration the LTT should be moved only for short distances to a storage location. The trailer storage procedures begin with the AK in the setup configuration detailed in WP 0014.

For installation of Assault Kitchen components in the LTT, use the alpha-numeric system outlined in Figure 9. D-rings assigned a number are standard recessed LTT D-rings. The D-rings assigned a letter are the smaller D-rings installed during LTT modification.

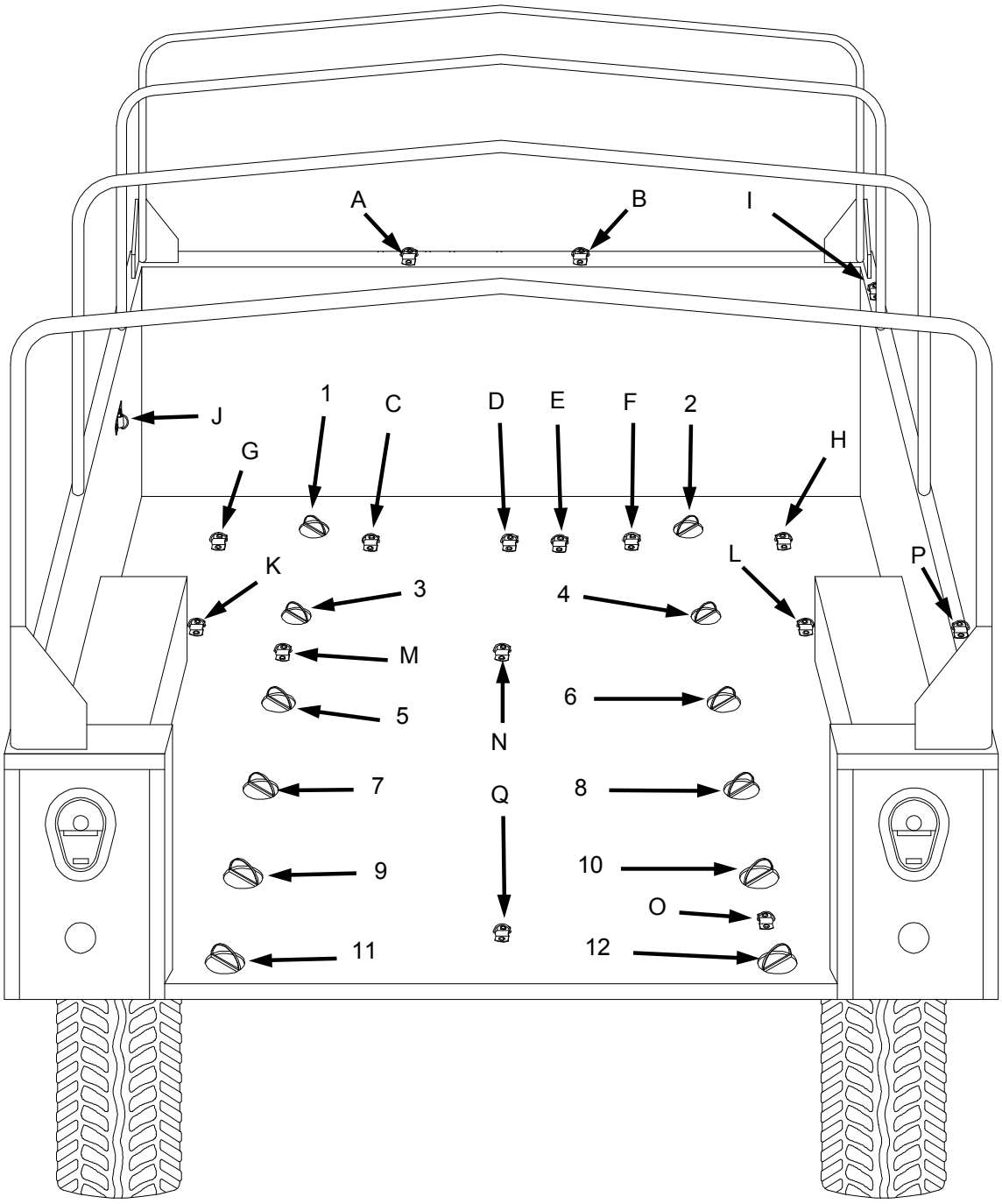


Figure 9. LTT D-ring Placement.

PREPARATION FOR MOVEMENT – CONTINUED

1. Drain all water from TRH.
2. If necessary, disconnect, coil, and store extension cord in MBU tool box.
3. If necessary, coil the NATO extension cable and place between the utensil box and the elastic cord used to secure the utensil box.
4. Remove fuel from both TRH burners (WP 0026).
5. Drain fuel lines back into fuel cans. Disconnect fuel line from TRH but leave opposite end connected to fuel can adapter. Lift disconnected end while depressing the check valve at the end of the hose connector and allow gravity to drain fuel into fuel can.
6. Disconnect fuel line from fuel can adapter when fuel line is drained of fuel.
7. Coil and store fuel line in MBU tool box.
8. Remove TRH power cord. Coil and store power cord in MBU tool box.
9. Remove fuel from MBU per TM 10-7310-281-13&P.
10. Drain fuel from fuel cans IAW unit SOP and local environmental regulations.
11. Disengage and roll up the LTT cargo cover to make it easier to access equipment and tie down points.

PREPARATION FOR MOVEMENT – CONTINUED

WARNING

If the trailer is not coupled to the towing vehicle, ensure that the front support leg is down and locked, the parking brakes are applied, the wheels are chocked, and the rear stabilizers are installed. Failure to follow this warning may cause trailer to roll or tilt, causing severe injury to personnel or damage to equipment.

12. Install LTT rear stabilizers (Figure 10, Item 3), front support leg (Figure 10, Item 1) and wheel chocks and apply LTT parking brake (Figure 10, Item 2). Refer to the LTT technical manual (TM 9-2330-392-14&P) for trailer landing leg and wheel chock installation and parking brake procedures.

13. Open LTT tailgate (Figure 10, Item 4).

14. Remove cargo straps from TRH tank.

WARNING

The TRH weighs approximately 320 pounds when empty. Six persons are required to move the TRH by lifting. When using the skids to slide the TRH without lifting, two persons are required.

15. Slide TRH (Figure 10, Item 5) back to edge of tailgate (Figure 10, Item 4) and left to be flush with folding table storage bracket.

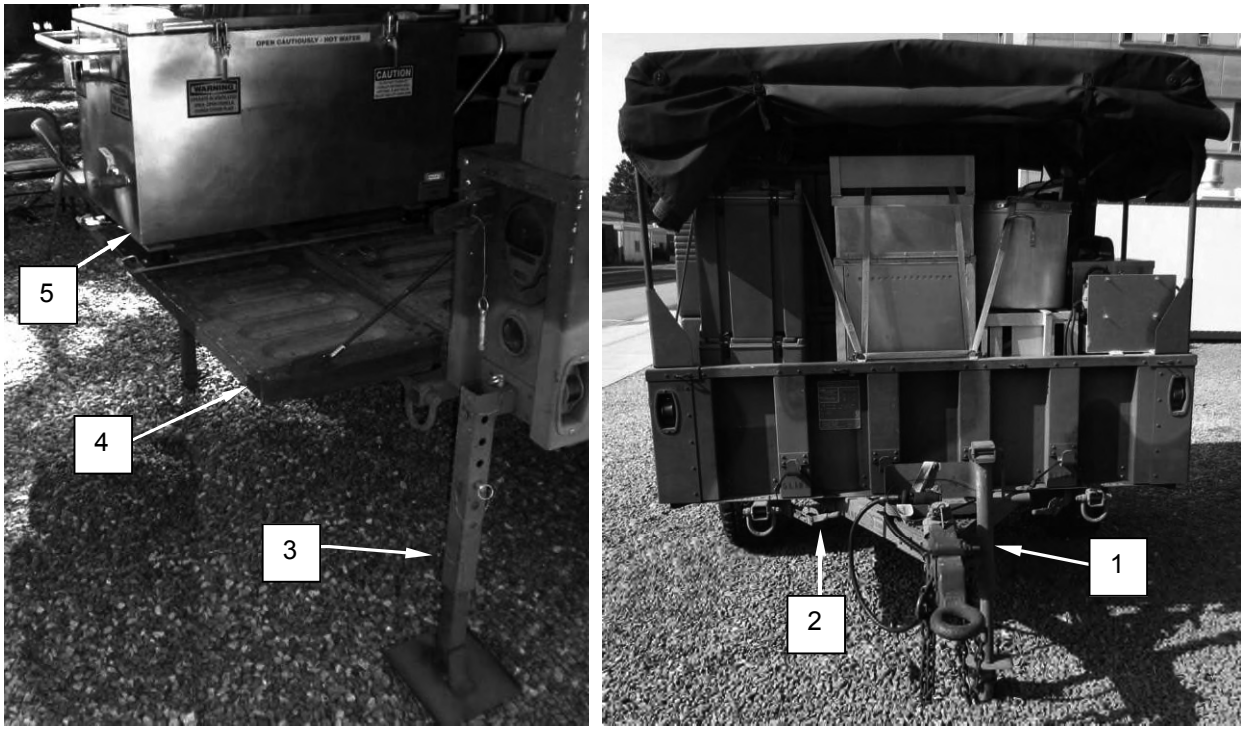


Figure 10. LTT Landing Legs and TRH Installation.

PREPARATION FOR MOVEMENT – CONTINUED

16. Remove tool box and two elastic cords from beneath IBD bracket.

17. Remove two IBDs and cargo strap from the front of the LTT.

18. Stack one IBD (Figure 11, Item 2) on top of the IBD that remains between the LTT front wall and the side loading pan carrier (SLPC) (Figure 11, Item 3).

19. Disconnect one elastic cord securing the rear IBD on the passenger side of the LTT.

20. Stack remaining IBD (Figure 11, Item 1) from the front of the LTT on top of the IBD in the rear right corner of the LTT.

21. Position elastic cords that were used to retain IBDs so that the hooks of the cords are on the outside edges of D-rings A (Figure 11, Item 5) and B (Figure 11, Item 4).

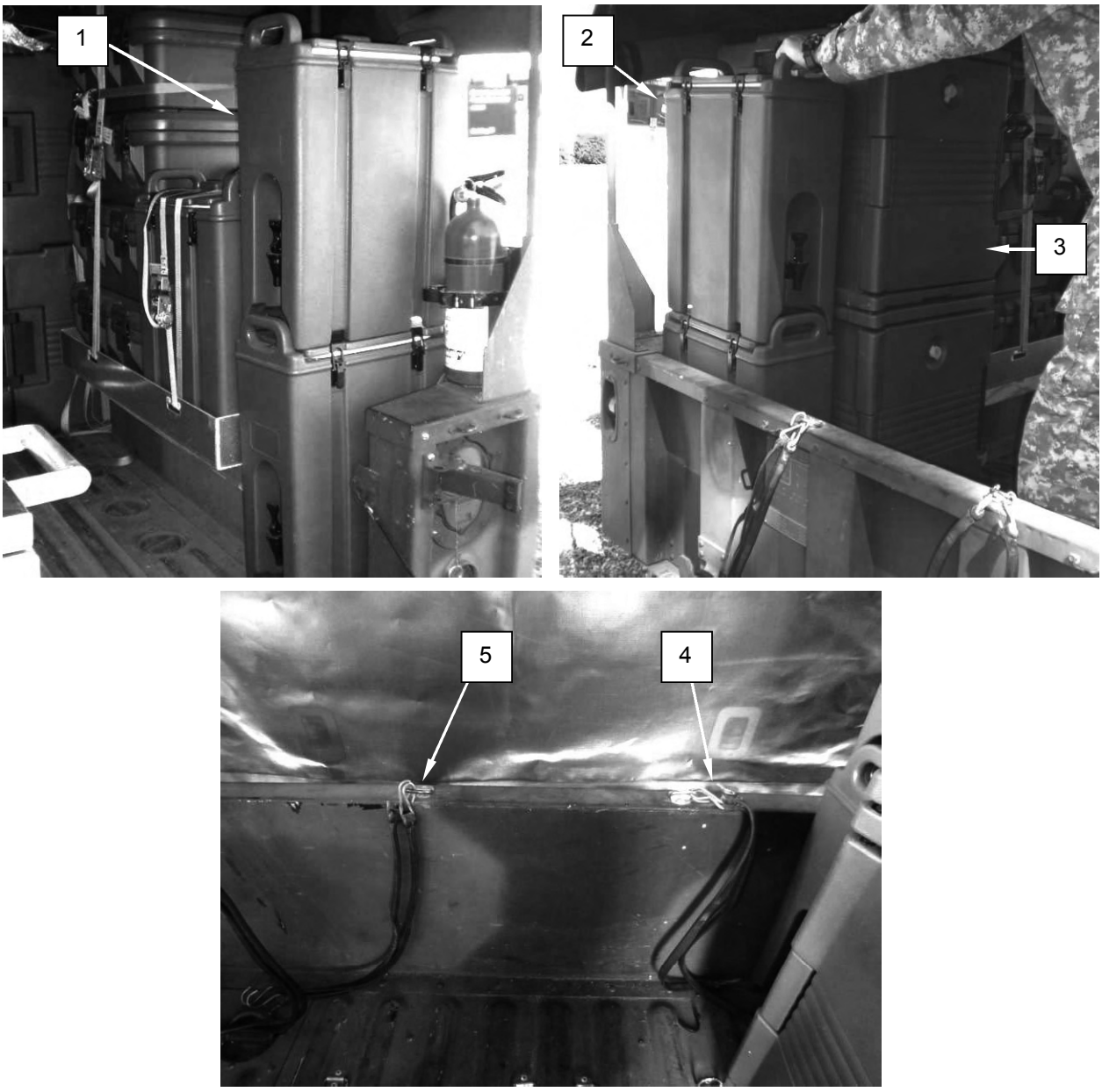


Figure 11. IBD Placement.

PREPARATION FOR MOVEMENT – CONTINUED

22. Secure the two IBDs between the LTT front wall and the SLPCs as follows:

    a. Place one 14-foot cargo strap on the top IBD with the ratchet (Figure 12, Item 2) beside the cover handle and the strap running through the outer IBD handle (Figure 12, Item 1).

    b. Pass the cargo strap outside and through D-ring I (Figure 12, Item 5) and back through both IBD handles (Figure 12, Item 1 and Item 3). Route strap on opposite side of IBD cover handle from ratchet placement.

    c. Pass the cargo strap inside and through D-ring B (Figure 12, Item 4) and back through inner IBD handle (Figure 12, Item 3).

    d. Ratchet strap on top of IBD.

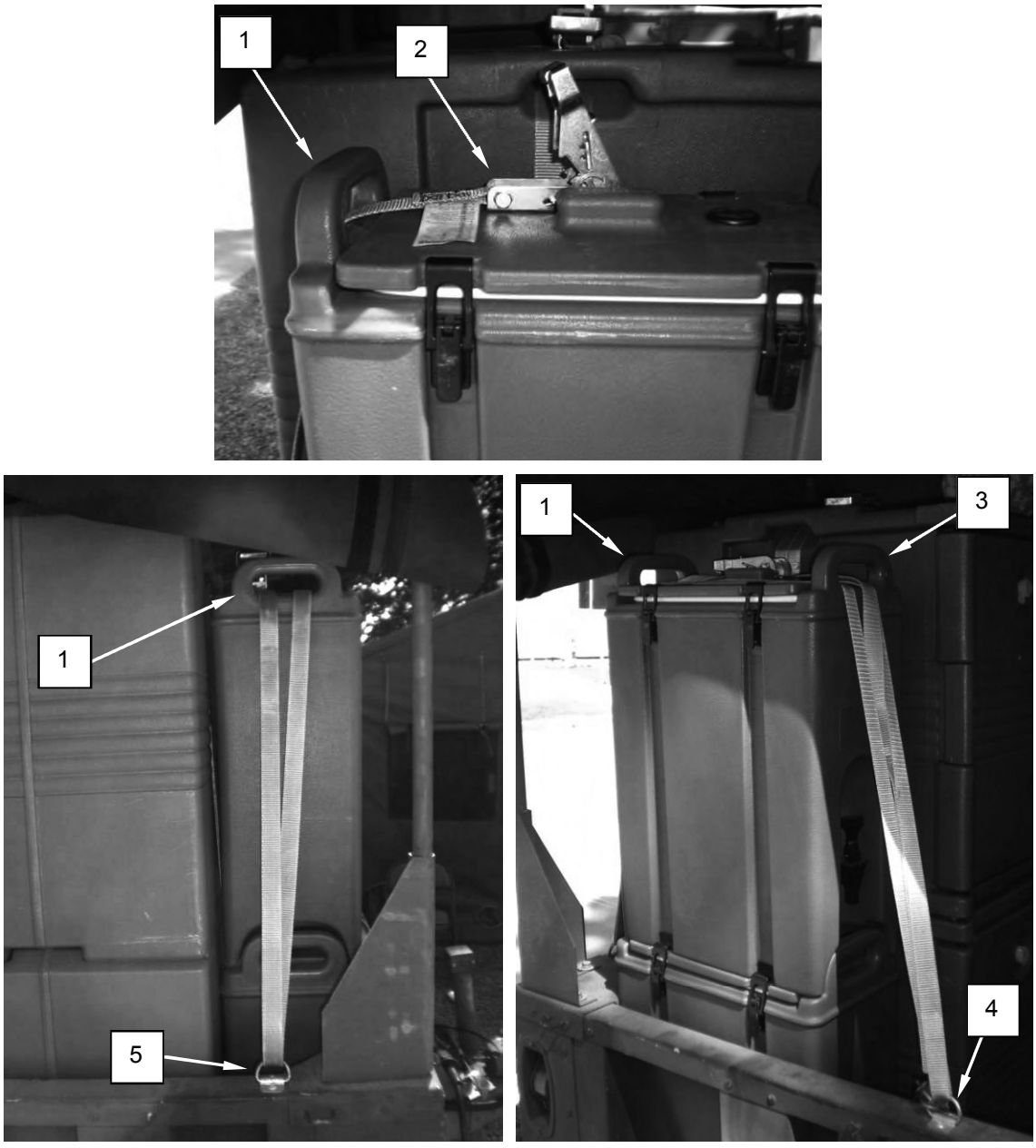


Figure 12. Securing IBDs.

PREPARATION FOR MOVEMENT – CONTINUED

23. Remove shelves from top SLPC and place in bottom SLPC.

24. Place AK tool box in top SLPC.

25. Place the M59A (Figure 13, Item 3) into the trailer as follows:

    a. Remove cooking pot cradle with cooking pots, and roasting pan from M59A.

    b. Open lid of TRH (Figure 13, Item 1) and position TRH lid latches (Figure 13, Item 2) so that latch is upright and latch handle is facing downward. This will allow clearance for the M59A.

    c. Loosen ratchet on IBD installed in driver side storage bracket. Slide ratchet on top of IBD to allow clearance for M59A.

    d. Place M59A in LTT and position flush with SLPC (Figure 13, Item 4) and front wall of LTT. Position M59A so that the stove compartment opens facing the tailgate of the LTT.

Figure 13. M59A Placement.

PREPARATION FOR MOVEMENT – CONTINUED

e. Open M59A lid (Figure 14, Item 1) and place roasting pan (Figure 14, Item 2) inside top section of M59A. Close M59A lid.

f. Place cooking pots with lids and cooking pot cradle inside M59A stove compartment (Figure 14, Item 3). One lid can be placed on cooking pot. Place the remaining lid sideways inside M59A stove compartment. Close stove compartment.

g. Place MBU, with the control panel facing front of LTT, into heater compartment on M59A.

h. Invert griddle adapter (Figure 14, Item 4) and place griddle inside adapter.

i. Place griddle adapter (Figure 14, Item 4) centered on top of M59A. Position so that the slots on the griddle adapter are facing the front and rear of the LTT.

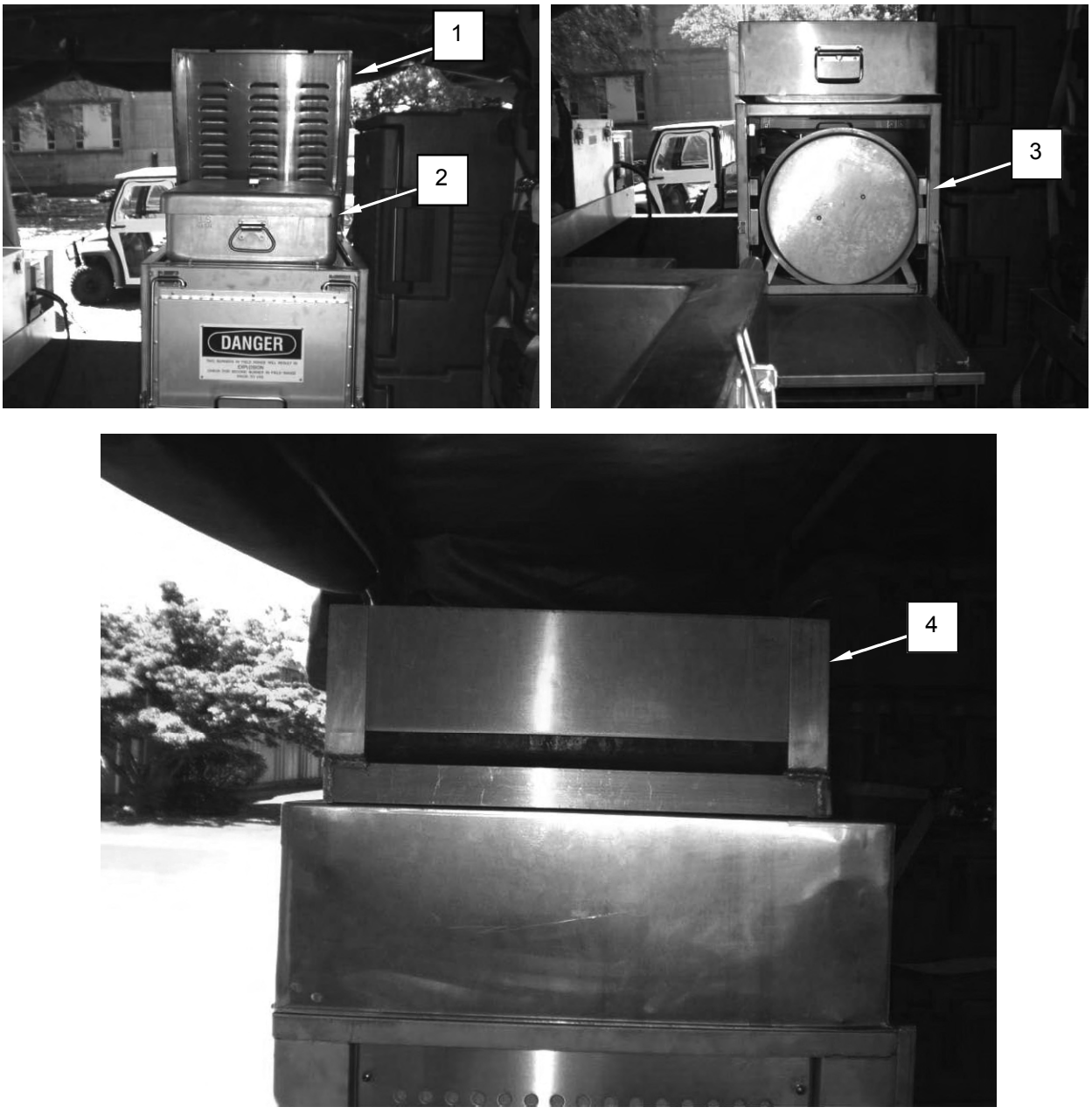


Figure 14. Positioning M59A and Accessories.

PREPARATION FOR MOVEMENT – CONTINUED

26. Secure M59A inside LTT with a 25-foot cargo strap as follows:

    a. Place the ratchet (Figure 15, Item 8) of a 25-foot cargo strap in front of M59A with strap routed to LTT floor.

    b. Pass strap through D-ring N (Figure 15, Item 7).

    c. Run strap through front slot of griddle adapter (Figure 15, Item 1), one handle of griddle (Figure 15, Item 5), then back slot of griddle adapter (Figure 15, Item 2).

    d. Pass strap inside and through D-ring A (Figure 15, Item 3).

    e. Pass strap outside and through D-ring B (Figure 15, Item 4).

    f. Run strap through rear slot of griddle adapter (Figure 15, Item 2), other handle of griddle (Figure 15, Item 6), then front slot of griddle adapter (Figure 15, Item 1).

    g. Pass strap through ratchet (Figure 15, Item 8) and tighten ratchet (Figure 15, Item 8) in front of M59A.

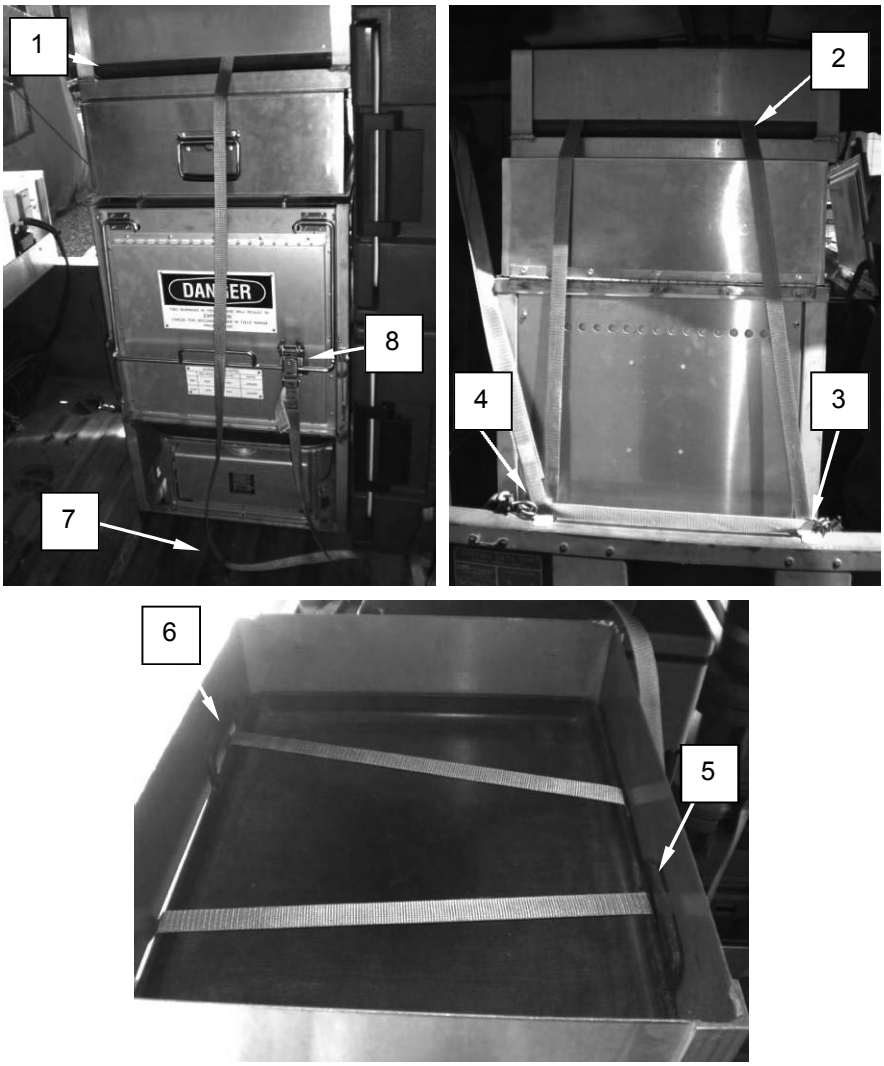


Figure 15. Securing M59A and Griddle Assembly.

PREPARATION FOR MOVEMENT – CONTINUED

27. Place one water can (Figure 16, Item 8) sideways between the utensil box (Figure 16, Item 7) and the driver side storage bracket (Figure 16, Item 1).

28. Position the cooking pot cradle assembly and cooking pots as follows:

    a. Nest the cooking pot cradle adapter (Figure 16, Item 3) inside the burner rack (Figure 16, Item 2).

    b. Place base rack over burner rack.

    c. Place nested cooking pot cradle assembly (Figure 16, Item 5) on its short side between driver side storage bracket and M59A (Figure 16, Item 4). Position cooking pot cradle flush with the LTT front wall. Ensure D-ring 3 (Figure 16, Item 6) is accessible when cooking pot cradle assembly is positioned.

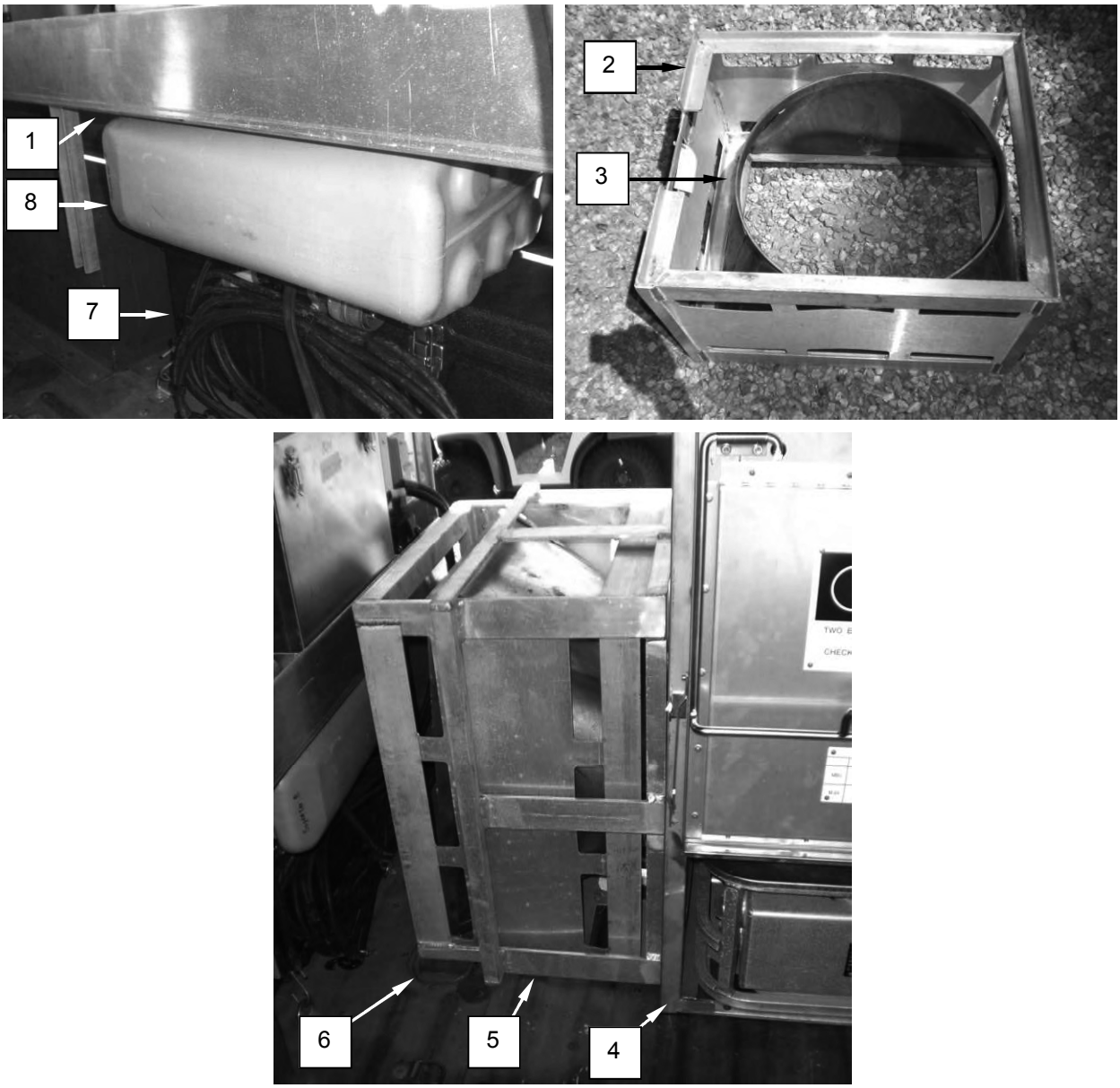


Figure 16. Water Can and Cooking Pot Cradle Assembly Placement.

PREPARATION FOR MOVEMENT – CONTINUED

29. Position cooking pots and lids as follows:

    a. Place 15-gallon cooking pot on the ground.

    b. If equipped, rest the 10-gallon cooking pot inside 15-gallon cooking pot.

    c. Place one lid on cooking pot(s).

    d. Place cooking pot(s) (Figure 17, Item 2) on top of nested cooking pot cradle assembly (Figure 17, Item 5) with handle(s) (Figure 17, Item 1) facing inside of LTT.

    e. Place ratchet (Figure 17, Item 7) of 14-foot cargo strap on nested cooking pot cradle assembly (Figure 17, Item 5) and run strap down and through D-ring 3 (Figure 17, Item 6).

    f. Pass strap through inside facing handles (Figure 17, Item 1) of cooking pot(s), through lid handle, then through outside facing handles (Figure 17, Item 3).

    g. Route strap inside and through D-ring A (Figure 17, Item 4) of LTT.

    h. Pass strap back through outside facing handles of cooking pot, cooking pot lid handle, and inside facing cooking pot handles.

    i. Pass strap through ratchet (Figure 17, Item 7) and tighten in front of cooking pots.

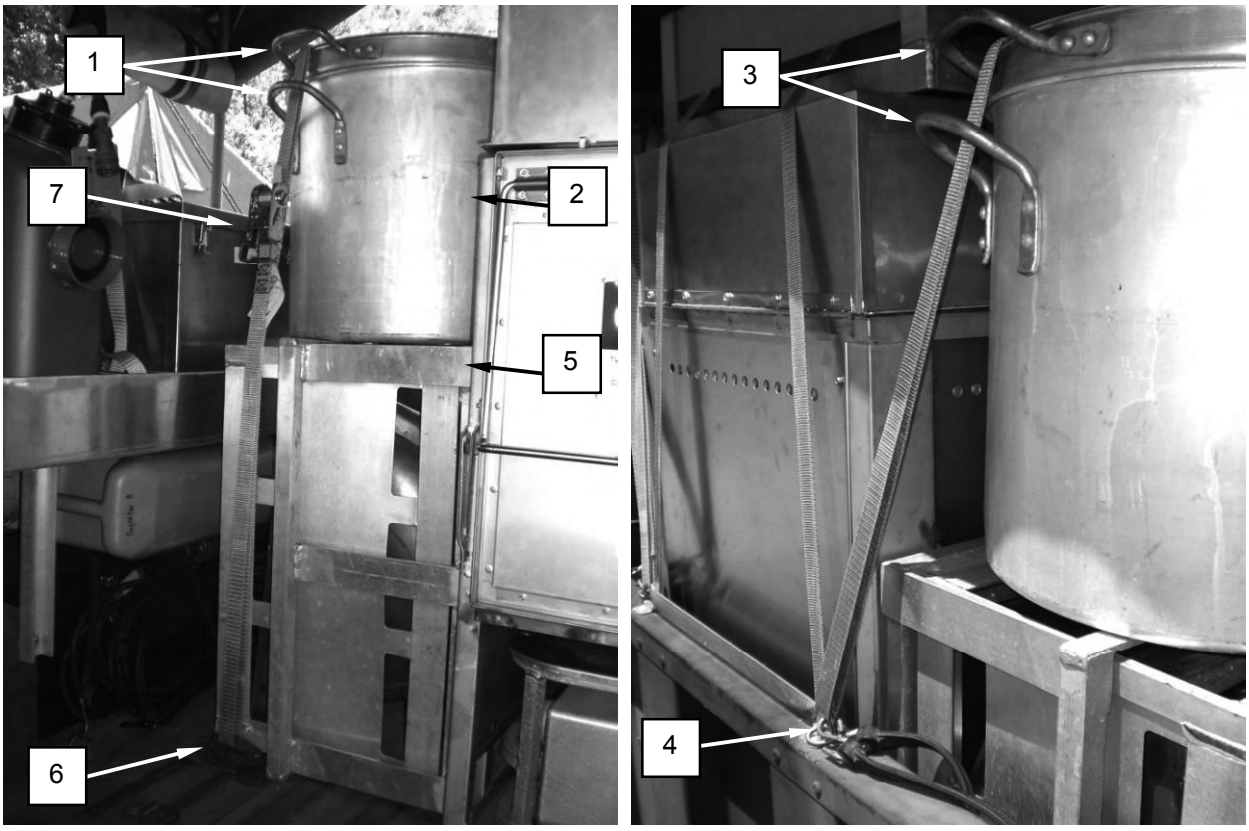


Figure 17. Securing Cooking Pots.

PREPARATION FOR MOVEMENT – CONTINUED

30. Adjust and tighten ratchet straps that are attached to D-rings on front of LTT securing IBDs, M59A, and cooking pots.

31. Place two water cans (Figure 18, Item 1) sideways between driver side storage bracket and LTT wheel well.

32. Coil and store TRH drain hose inside TRH tank. Close and latch TRH tank lid.

33. Slide TRH onto LTT cargo bed with exhaust deflector (Figure 18, Item 2) facing rear of LTT. Install TRH between D-ring 11 (Figure 18, Item 5) and D-ring Q (Figure 18, Item 3). Ensure that the skids of the TRH slide between the ridges (Figure 18, Item 4) of the corrugated LTT floor. The skids are designed to fit between two ridges at the same time. Ensure LTT tail gate closes without interference from the TRH tank drain valve.

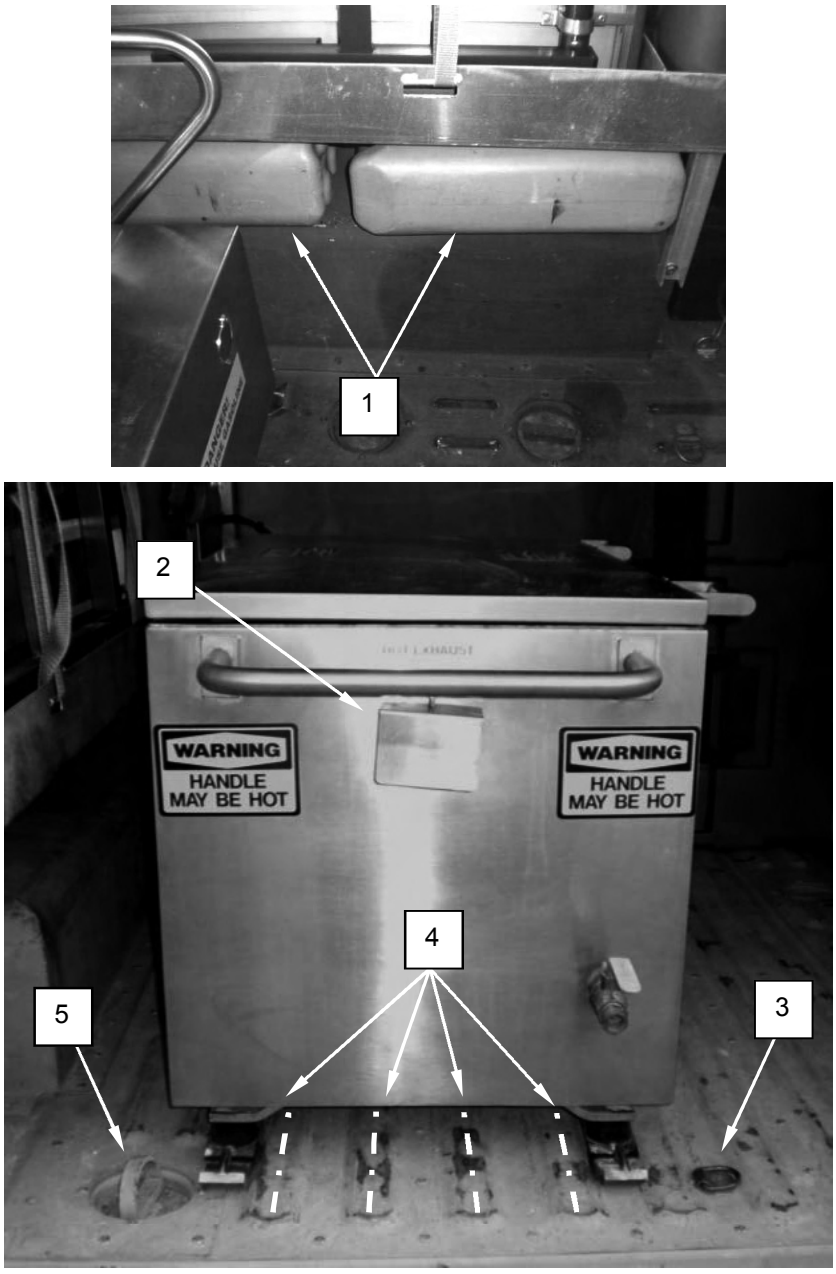


Figure 18. Securing Water Cans and TRH Positioning.

PREPARATION FOR MOVEMENT – CONTINUED

34. Install burner-side cargo strap as follows:

    a. Lay a 5-foot cargo strap on LTT bed, at burner side of TRH. Ensure ratchet (Figure 19, Item 7) is in front of heater (Figure 19, Item 1) between skids, and strap (Figure 19, Item 6) extends out towards driver side of LTT.

    b. Pass cargo strap through skid ring (Figure 19, Item 2) on driver side.

    c. Pass cargo strap over and through D-ring M (Figure 19, Item 3).

    d. Pass strap back through skid ring on driver side, and then through skid ring on passenger side (Figure 19, Item 5).

    e. Pass cargo strap under and through D-ring N (Figure 19, Item 4) and through passenger side skid ring.

    f. Pass cargo strap through ratchet and tighten three clicks on the ratchet, but do not fully tighten ratchet at this time.

NOTE

View from front of LTT, looking toward rear of LTT.

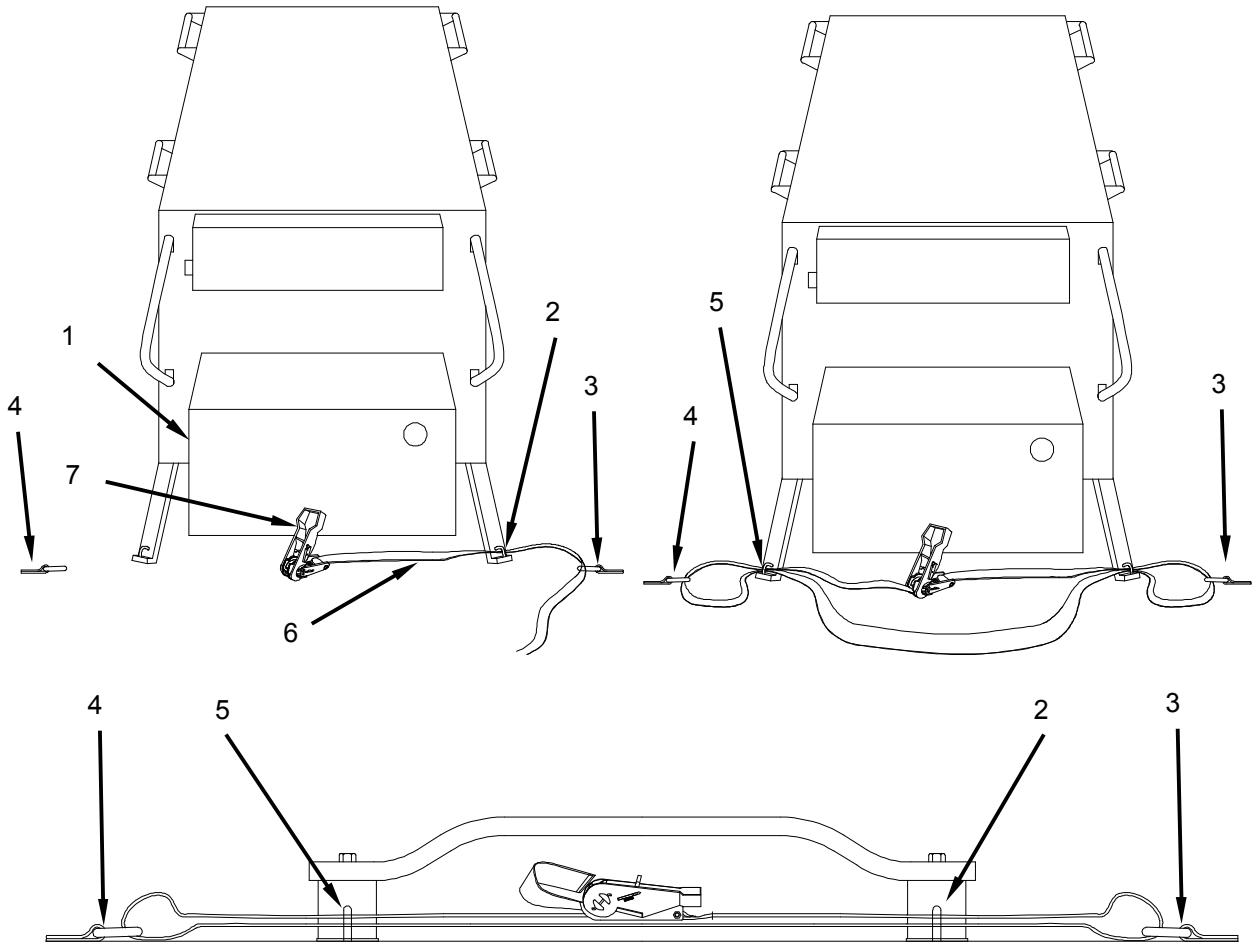


Figure 19. TRH Burner-side Cargo Strap Path.

PREPARATION FOR MOVEMENT – CONTINUED

35. Install exhaust-side cargo strap as follows:

    a. Lay a 5-foot cargo strap on LTT bed with ratchet (Figure 20, Item 6) between skids. Run strap to passenger side of LTT.

    b. Pass strap through TRH skid ring (Figure 20, Item 5) on passenger side.

    c. Pass strap under and through D-ring Q (Figure 20, Item 3).

    d. Pass strap over front edge of skid mount bracket to the rear of the bracket and underneath the TRH (Figure 20, Item 2) to driver side of skid mount bracket.

CAUTION

Drape cargo strap over facing edge of skid mounting bracket. Do not drape cargo strap over ends of skid mounting bracket. This can cause wear and eventually damage cargo strap.

    e. Pass strap over the front edge of driver side skid mount (Figure 20, Item 1) and pass over and through D-ring 11 (Figure 20, Item 8).

    f. Pass strap back through driver side skid ring (Figure 20, Item 7) through ratchet. Pull slack tight and ratchet three times. Do not fully tighten.

    g. Lay another 5-foot cargo strap (Figure 20, Item 4) on the LTT bed with ratchet between skids of TRH. Run strap to passenger side of LTT.

    h. Pass cargo strap through TRH skid ring (Figure 20, Item 5) on passenger side.

    i. Pass cargo strap over and through D-ring Q (Figure 20, Item 3).

    j. Run free end of strap under itself and pass strap back through passenger skid ring (Figure 20, Item 5) then driver side skid ring (Figure 20, Item 7).

    k. Pass strap under and through D-ring 11 (Figure 20, Item 8) and back through driver side skid ring (Figure 20, Item 7). Pass strap through ratchet, tighten three clicks but do not fully tighten ratchet at this time.

PREPARATION FOR MOVEMENT – CONTINUED

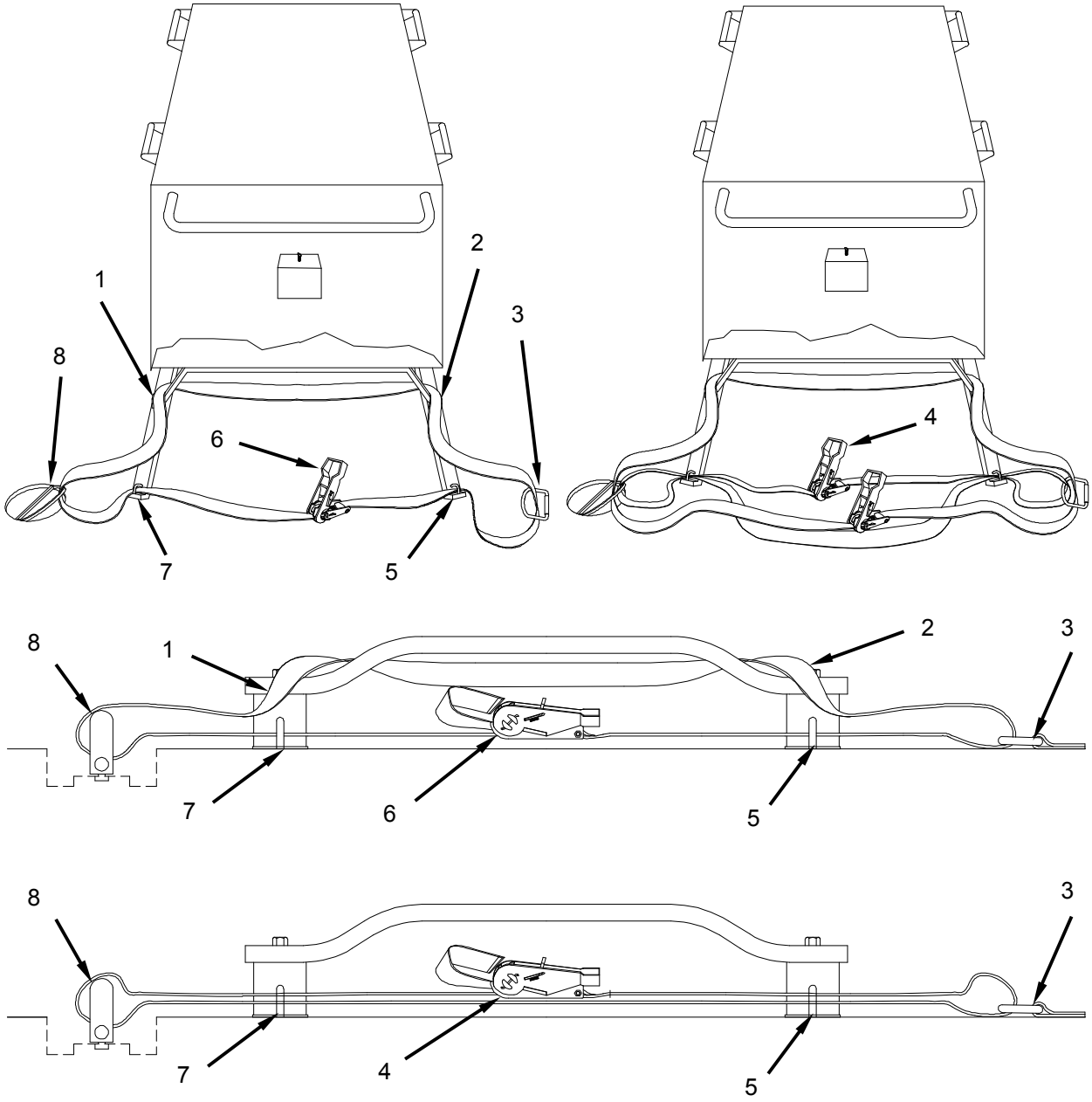


Figure 20. TRH Drain-side Cargo Strap Path.

PREPARATION FOR MOVEMENT – CONTINUED

36. Secure two IBDs (Figure 21, Item 3) located at the rear, passenger side of LTT as follows:

    a. Position ratchet (Figure 21, Item 6) of a 14-foot cargo strap at midway point, in front of IBD stack, with strap routed down.

    b. Pass cargo strap outside and through D-ring O (Figure 21, Item 5).

    c. Route cargo strap to top of IBD stack and through inner facing handle (Figure 21, Item 1) on top IBD.

    d. Route cargo strap to one side of IBD cover handle then through outer facing handle (Figure 21, Item 2) on top IBD.

    e. Run strap inside and trough D-ring P (Figure 21, Item 4) then through outer facing handle (Figure 21, Item 2) on top IBD.

    f. Route cargo strap on side of IBD cover handle. Ensure strap is on opposite side of strap routing made in a previous step.

    g. Pass strap trough inner facing handle (Figure 21, Item 1) of top IBD.

    h. Pass strap through ratchet (Figure 21, Item 6). Tighten ratchet (Figure 21, Item 6) in front, at midway point of IBD stack.

Figure 21. Securing IBDs.

PREPARATION FOR MOVEMENT – CONTINUED

37. Position ice chest (Figure 22, Item 1) as follows:

    a. Remove four thumb screws and the ice chest lid. Set aside lid and hardware.

    b. Place empty ice chest (Figure 22, Item 1) on tailgate.

    c. Fold and place cargo net inside ice chest.

    d. If inverter is installed in HMMWV, remove inverter and place inside ice chest. If inverter is installed in LTT, leave inverter in place.

    e. Store two elastic cords, cooking pot lid, and one 14-foot cargo strap in ice chest. Depending on inventory, you may or may not have extra items.

    f. Install lid on ice chest.

    g. Place ice chest with spigot (Figure 22, Item 6) facing tailgate on top of TRH. Ensure the bottom edge of the ice chest, opposite the spigot, is flush with the edge of the TRH, above the burner.

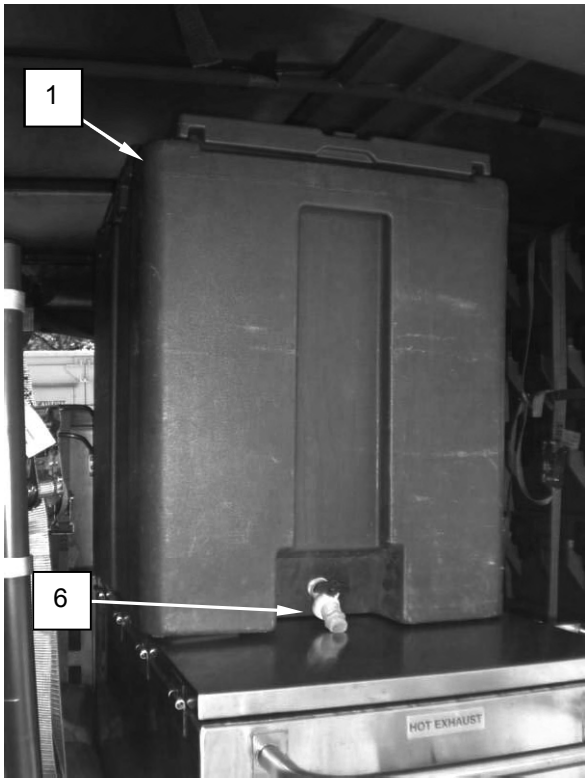


Figure 22. Storing the Ice Chest.

PREPARATION FOR MOVEMENT – CONTINUED

38. Use two 14-foot cargo straps to secure ice chest as follows:

    a. Position ratchet (Figure 23, Item 6) of one 14-foot cargo strap (Figure 23, Item 1) on side of ice chest and run cargo strap between ice chest handle (Figure 23, Item 2) and ice chest lid.

    b. Route strap down opposite side of ice chest and beneath outer TRH tank handle (Figure 23, Item 3).

    c. Run strap above TRH primary electronic control panel (Figure 23, Item 4) and beneath inner TRH tank handle (Figure 23, Item 5).

    d. Pass cargo strap through ratchet on side of ice chest and tighten ratchet (Figure 23, Item 6).

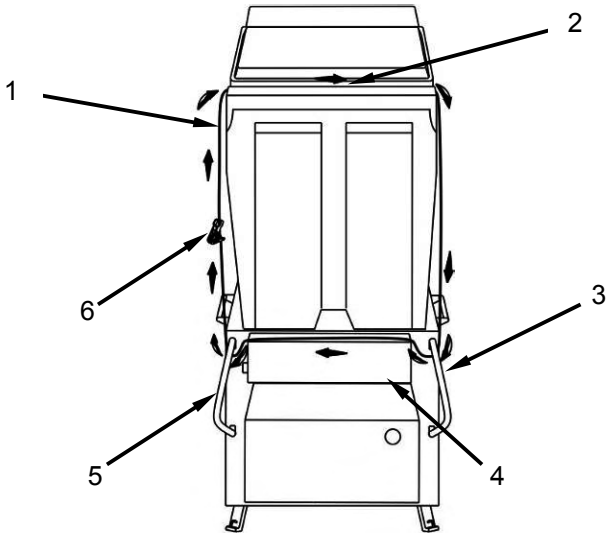


Figure 23. Routing the First Strap.

    e. Wrap second 14-foot cargo strap (Figure 24, Item 1) around ice chest and under the TRH tank, between TRH tank and skids. Ratchet must be positioned on same side (Figure 22, Item 2) of ice chest as previous ratchet placement. Ensure the cargo strap is routed over the sliding portion of the ice chest lid and flush with the stationary portion of the ice chest lid.

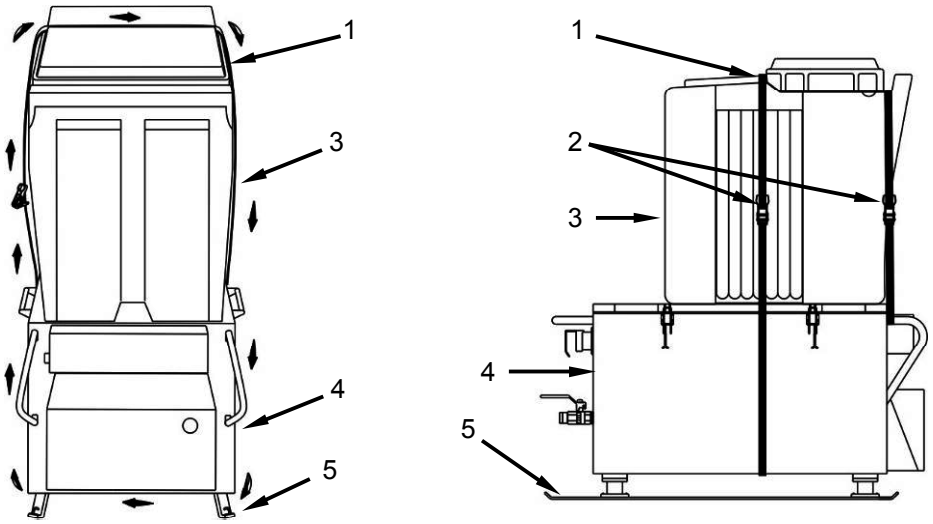


Figure 24. Routing the Second Strap.

PREPARATION FOR MOVEMENT – CONTINUED

39. Place three water cans (Figure 25, Item 7) sideways between TRH (Figure 25, Item 1) and driver side storage bracket (Figure 25, Item 8).

CAUTION

Do not over tighten the cargo strap as this may bend the TRH skids.

40. Tighten cargo straps on TRH and all other food service equipment.

41. Reposition cargo strap on IBDs in passenger side storage bracket and tighten as necessary.

42. Position MBU tool box (Figure 25, Item 3) on its side, beneath passenger side storage bracket (Figure 25, Item 2).

43. Place one elastic cord connected to D-ring O (Figure 25, Item 4) and D-ring 8 (Figure 25, Item 6) and routed above MBU tool box.

44. Secure MBU tool box with one elastic cord connected to D-ring O (Figure 25, Item 4) and D-ring 8 (Figure 25, Item 6) and routed through MBU tool box handle (Figure 25, Item 5).

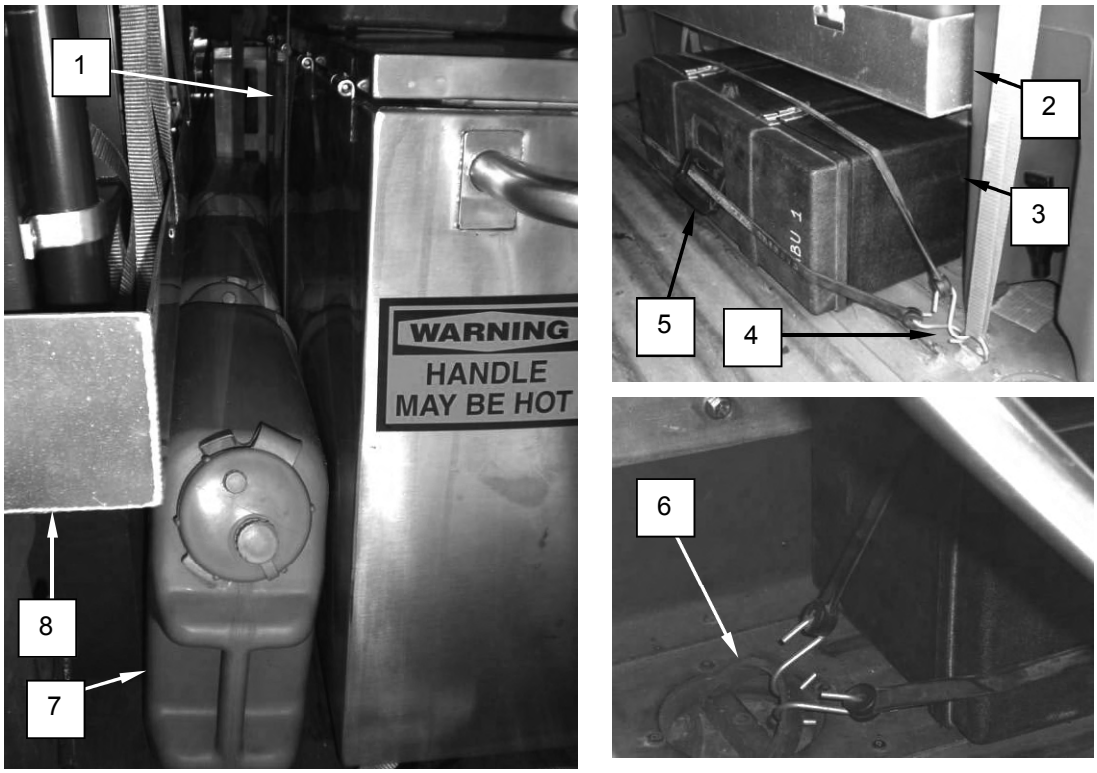


Figure 25. Water Cans and MBU Tool Box.

45. Close and secure LTT tailgate.

46. Roll down LTT cargo cover and secure to LTT with straps and buckles.

END OF TASK

END OF WORK PACKAGE

OPERATOR AND FIELD MAINTENANCE

TRAY RATION HEATER (TRH)
OPERATION UNDER USUAL CONDITIONS

INITIAL SETUP:

Tools and Special Tools	Personnel Required
AK Tool Box (WP 0069, Item 3)	Food Service Specialist 92G (2)
Equipment Condition	**References**
TRH Installed IAW WP 0014 and/or WP 0015	FM 21-11 WP 0010, 0013, 0014, 0015, 0026

OPERATING PROCEDURES FOR TRAY RATION HEATER (TRH)

1. Perform PMCS IAW WP 0013.
2. Verify burner assembly is installed on tray ration heater IAW WP 0026.
3. Fill TRH water tank with tray pack. Then add water so that the water level is approximately 1-1/2 inches from the top of the rations.
4. Close TRH lid and secure latches.

OPERATING PROCEDURES FOR TRAY RATION HEATER (TRH) – CONTINUED

WARNING

HIGH VOLTAGE is used in the operation of this equipment. Never work on electrical components alone. External power should be shut off whenever possible and all maintenance personnel must be familiar with operation and hazards of the equipment. **DEATH ON CONTACT** may result if personnel fail to observe safety precautions

For artificial respiration, refer to FM 21-11.

Do not stand in water while handling live power cords, or electrical shock may result. Position all power cables so that they are out of the way during operation and are not in water.

During operation, the TRH produces harmful carbon monoxide (CO) and other gases. Carbon monoxide is a colorless, odorless, and tasteless gas. Carbon monoxide poisoning can cause symptoms such as nausea, dizziness or headaches and in severe cases may result in brain damage, heart damage or death. To prevent CO poisoning, ensure that the TRH operating spaces are well ventilated during burner operation. Under no circumstances, should the TRH be operated in any enclosure with all vents closed.

5. Ensure TRH power cord from TRH electrical control box (Figure 1, Item 1) is connected to the GFCI outlet on the power inverter (Figure 1, Item 2), or to a 110 VAC outlet.

Figure 1. TRH Power Connections.

OPERATING PROCEDURES FOR TRAY RATION HEATER (TRH) – CONTINUED

6. If using the inverter, ensure circuit breaker (Figure 2, Item 2) on TRH power inverter is not popped out. Set on/off switch (Figure 2, Item 1) to the ON position.

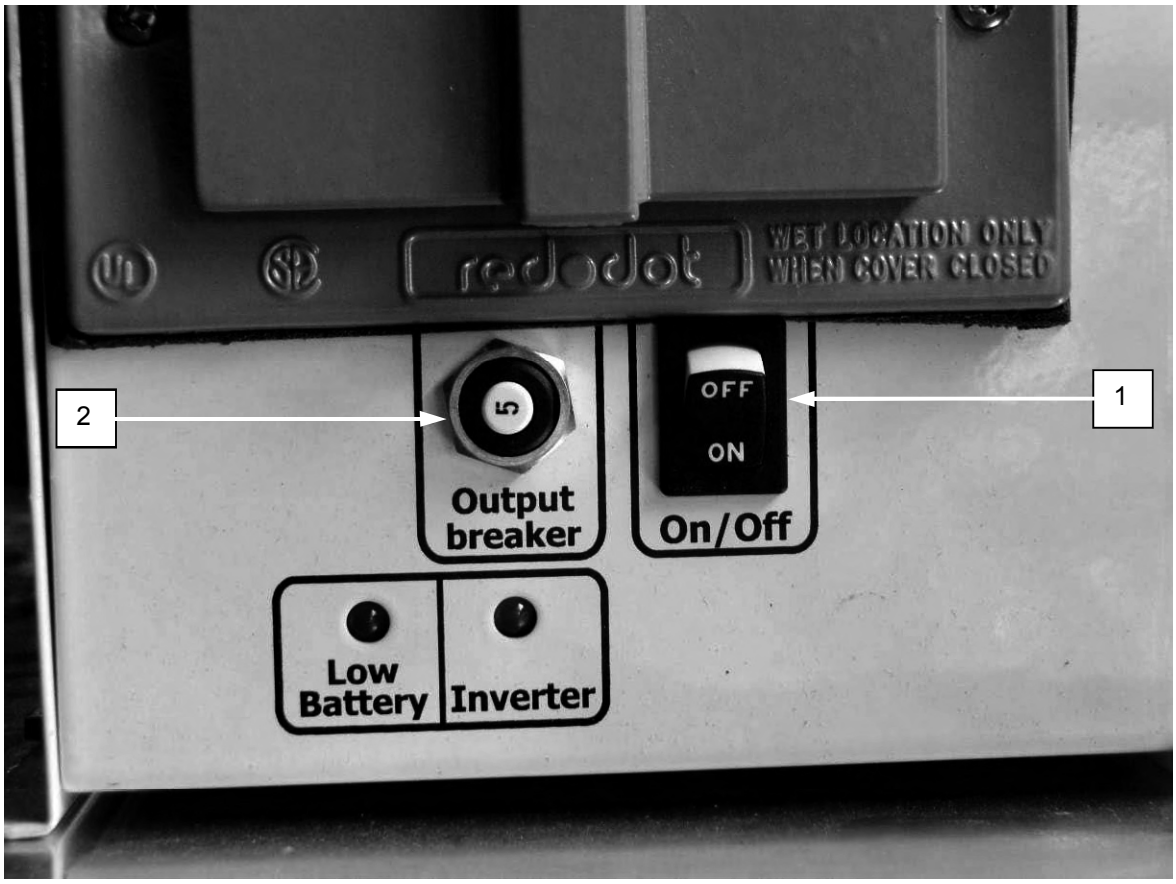


Figure 2. TRH Power Inverter.

WARNING

Never use the BOIL mode to prepare rations because it bypasses built in safety features and may cause personnel to be burned by vented steam or scalding can contents. Never leave the TRH unattended when operating in the BOIL mode. Water may boil over, causing injury to personnel.

7. Ensure AUTO/BOIL switch on TRH electrical control box is in the AUTO position.

OPERATING PROCEDURES FOR TRAY RATION HEATER (TRH) – CONTINUED

8. Lift TRH burner cover (Figure 3, Item 1). Remove cover by gently tapping it to the right, which will make it slide off hinges.

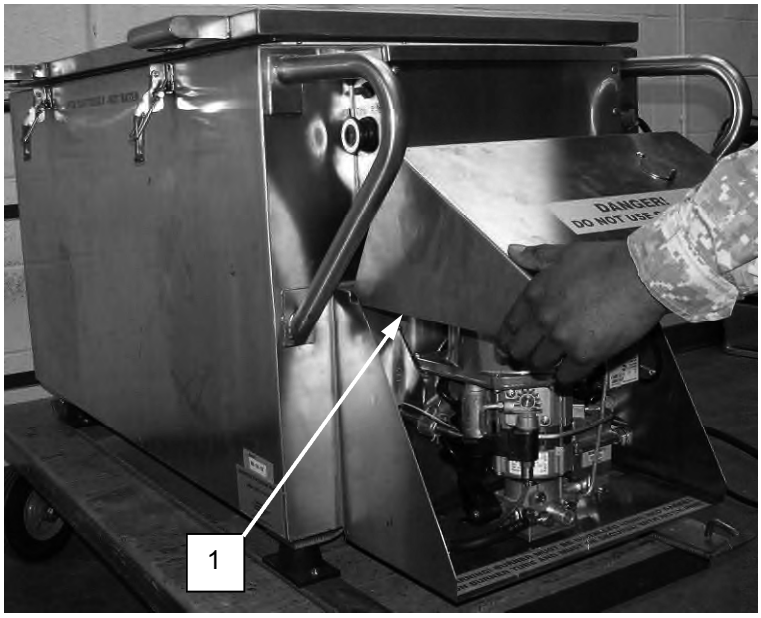


Figure 3. Remove TRH Burner Cover.

9. Ensure fuel flow control (Figure 4, Item 1) is set to M. The dot (Figure 4, Item 3) on the flow control points to the desired setting.

10. Ensure combustion air flow control knob (Figure 4, Item 2) is set to 10.

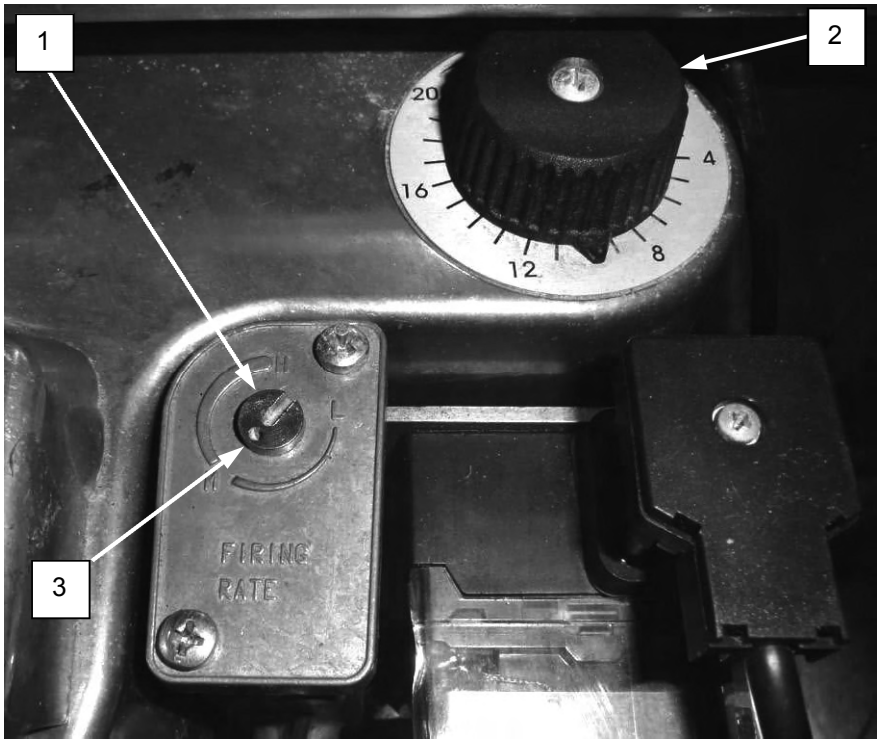


Figure 4. Fuel Flow and Air Flow Controls.

OPERATING PROCEDURES FOR TRAY RATION HEATER (TRH) – CONTINUED

11. Pull the pull-on/push-Off switch on TRH to ON position (Figure 5, Item 1).

Figure 5. Pull-On/Push-Off Switch.

12. Listen for the sound of the burner and motor running. If burner and motor are running properly, proceed to step 14.

13. If TRH burner does not start, the burner will go into “lockout”, and the reset button (Figure 6, Item 1) on the control box will illuminate with an amber LED light. Perform the following steps to start the burner:

Figure 6. TRH Burner Control Box Reset Button.

OPERATING PROCEDURES FOR TRAY RATION HEATER (TRH) – CONTINUED

a. Wait 60 seconds before resetting the relay. While depressing the starting button inlet valve (Figure 7, Item 2) and simultaneously closing off the finger priming port (Figure 7, Item 1) with a finger, depress TRH burner control box reset button (Figure 6, Item 1). Hold input valve and cover finger priming port for 10 seconds.

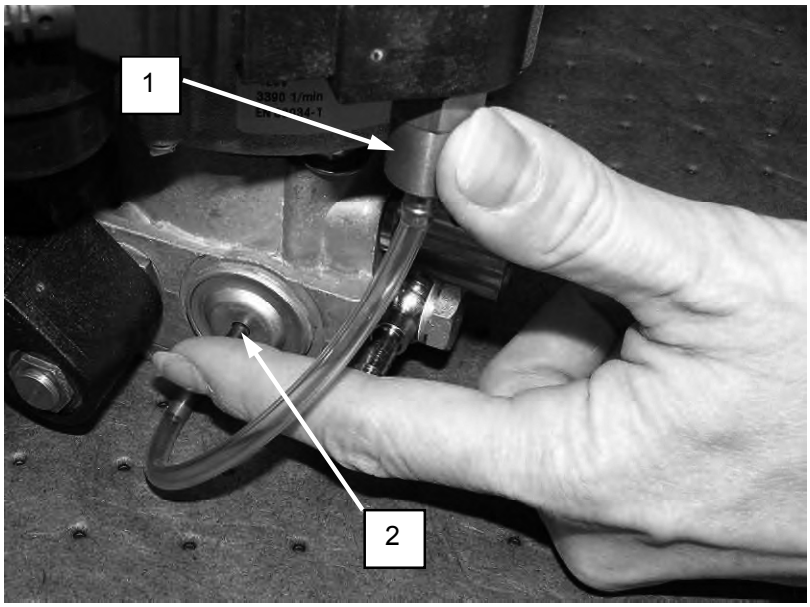


Figure 7. Priming Procedure.

b. In a dry system (no fuel in TRH burner or fuel line, the priming process may be required up to 3 times. If the burner does not prime and light after 3 priming attempts, perform the troubleshooting IAW WP 0010.

c. After ignition, observe TRH burner is functioning properly.

d. Replace TRH burner cover.

14. Replace TRH burner cover by aligning hinge pins and tapping gently to the left.

15. Allow water in TRH tank to heat to 180°F.

16. After tray rations are heated they can be placed in the IFCs for serving or in the SLPCs for storage.

END OF TASK

OPERATING PROCEDURES FOR TRAY RATION HEATER (TRH) – CONTINUED

TRH Shutdown

1. Push the pull-on/push-off switch on TRH to OFF position (Figure 8, Item 1).

Figure 8. Pull-On/Push-Off Switch.

END OF TASK

END OF WORK PACKAGE

OPERATOR AND FIELD MAINTENANCE

OPERATION UNDER UNUSUAL CONDITIONS

INITIAL SETUP:

Tools and Special Tools

AK Tool Box (WP 0069, Item 3)

Personnel Required

Food Service Specialist 92G (2)

References

FM 4-25.11
TM 10-7310-281-13&P

Equipment Condition

All equipment shall be serviceable and ready for use.

OPERATION IN UNUSUAL ENVIRONMENT/WEATHER CONDITIONS

Precautions can be taken to protect the Assault Kitchen from the effects of severe weather and to minimize potentially dangerous conditions. The following steps are designed to prevent damage and avoid possible injury to personnel.

High Winds/Dust

During operation in windy and dusty conditions:

- If possible, park vehicle facing into the wind.

WARNING

During operation, the TRH produces harmful carbon monoxide (CO) and other gases. Carbon monoxide is a colorless, odorless, and tasteless gas. Carbon monoxide poisoning can cause symptoms such as nausea, dizziness or headaches and in severe cases can result in brain damage, heart damage or death. To prevent CO poisoning, ensure that the TRH operating spaces are well ventilated during burner operation. Under no circumstances, should the TRH be operated in any enclosure with all vents closed.

- Keep area of TRH operation well ventilated. Leave flap of HMMWV or Light Tactical Trailer (LTT) cargo bed cover open during operation, or ventilate building, tent or shelter.
- Operate MBU in windy conditions IAW TM 10-7310-281-13&P.
- Keep equipment under cover or indoors when not in use.
- Keep quick-disconnect (QD) fuel line connections connected whenever possible to prevent sand and dust intrusion.
- Ensure fuel cans are tightly capped to prevent fuel from being contaminated.

OPERATION IN UNUSUAL ENVIRONMENT/WEATHER CONDITIONS – CONTINUED

- Ensure food and beverage containers are tightly sealed to prevent contamination.
- Wipe equipment down more frequently to keep as clean as possible.

Rain/Wet Climate

During operation in rain and in wet climates:

- Check cables for secure connections.
- Avoid letting electrical cable connections remain in running or standing water.
- Keep components protected from rain.

WARNING

During operation, the TRH produces harmful carbon monoxide (CO) and other gases. Carbon monoxide is a colorless, odorless, and tasteless gas. Carbon monoxide poisoning can cause symptoms such as nausea, dizziness or headaches and in severe cases can result in brain damage, heart damage or death. To prevent CO poisoning, ensure that the TRH operating spaces are well ventilated during burner operation. Under no circumstances, should the TRH be operated in any enclosure with all vents closed.

- Keep area of TRH operation well ventilated. Leave flap of HMMWV or LTT cargo bed cover open during operation, or ventilate building, tent or shelter.
- Keep TRH and power inverter out of the rain.
- For extended periods of rain/moisture, it may be necessary to remove the TRH Control Box and store it in a dry place when the system is not in operation.
- Operate MBU in rain/wet conditions IAW TM 10-7310-281-13&P.

OPERATION IN UNUSUAL ENVIRONMENT/WEATHER CONDITIONS – CONTINUED

Snow and Extreme Cold

During operation in snow and extreme cold:

WARNING

During operation, the TRH produces harmful carbon monoxide (CO) and other gases. Carbon monoxide is a colorless, odorless, and tasteless gas. Carbon monoxide poisoning can cause symptoms such as nausea, dizziness or headaches and in severe cases can result in brain damage, heart damage or death. To prevent CO poisoning, ensure that the TRH operating spaces are well ventilated during burner operation. Under no circumstances, should the TRH be operated in any enclosure with all vents closed.

- Keep area of TRH operation well ventilated. Leave flap of HMMWV or LTT cargo bed cover open during operation, or ventilate building, tent or shelter.
- Protect fuel supply from exposure to extreme cold whenever possible.
- Do not touch metal with bare hands.
- Monitor HMMWV battery charge.
- Leave QD connections connected as much as possible. Gasket in QD fittings can be hard to compress in cold weather.
- Ensure the tank lid gasket is sealing properly and preventing unnecessary heat loss from the tank.
- If the TRH is used once every 24 hours, no restrictions or special requirements apply when operating within 0 to 32 °F. The insulated tank and latched tank lid will maintain water temperature above 32 °F. Ensure the tank lid gasket is sealing properly and preventing unnecessary heat loss. Monitor tank water temperature with pocket thermometer during periods when TRH is not in use.
- If the TRH is used less than once every 24 hours, the tank should be drained after each use and then refilled as required when operating between 0 to 32 °F.
- Operate MBU in snow and extreme cold IAW TM 10-7310-281-13&P.

NOTE

In extreme cold temperatures, the fuel may gel or freeze in the filter. Use Diesel Fuel Arctic (DFA) or remove the fuel filter if fuel delivery problems due to cold weather occur.

The TRH is designed to operate effectively in cold weather down to –25 °F. Special precautions must be taken when operating in extreme cold temperatures (–25 to 0 °F). Prior to operating the burner below 0°F, run the burner for ten minutes using DFA to purge the fuel line of non-artic fuel. No further adjustments are required. Burn JP-8 or DFA.

OPERATION IN UNUSUAL ENVIRONMENT/WEATHER CONDITIONS – CONTINUED

Extreme Heat

During operation in extremely hot conditions:

WARNING

The TRH gives off heat when in operation. During operation, personnel shall exercise caution to prevent heat induced illnesses such as heat stroke and heat exhaustion. Keep area of operation ventilated and away from direct sunlight as much as possible. Refer to FM 4-25.11 for first aid treatment of heat induced illnesses. Failure to observe warnings may result in injury or death to personnel.

- Keep equipment shaded whenever possible.

WARNING

During operation, the TRH produces harmful carbon monoxide (CO) and other gases. Carbon monoxide is a colorless, odorless, and tasteless gas. Carbon monoxide poisoning can cause symptoms such as nausea, dizziness or headaches and in severe cases can result in brain damage, heart damage or death. To prevent CO poisoning, ensure that the TRH operating spaces are well ventilated during burner operation. Under no circumstances, should the TRH be operated in any enclosure with all vents closed.

- Keep area of TRH operation well ventilated. Leave flap of HMMWV or LTT cargo bed cover open during operation, or ventilate building, tent or shelter.

WARNING

DO NOT touch hot metal surfaces with bare hands. Failure to observe warnings may result in injury or death to personnel.

- Do not touch hot metal surfaces with bare hands.

OPERATION IN UNUSUAL ENVIRONMENT/WEATHER CONDITIONS – CONTINUED

WARNING

Be aware that fuel expands as the temperature rises – do not store TRH or fuel cans when full of fuel, where it is exposed to the sun for long periods. Failure to observe warnings may result in injury or death to personnel.

- Do not store TRH or fuel can when full of fuel, where it is exposed to the sun for long periods.
- Operate MBU in extreme heat IAW TM 10-7310-281-13&P.

High Altitude

- No special adjustments are required for AK operations at high altitudes.
- Operate MBU at high altitude IAW TM 10-7310-281-13&P.

Salt Water Areas

- Keep equipment covered or indoors when not in use.
- Keep equipment free from contact with salt water.
- If equipment does come in contact with salt water, clean with fresh water.
- Operate MBU in salt water areas IAW TM 10-7310-281-13&P.

END OF WORK PACKAGE

CHAPTER 3

TROUBLESHOOTING PROCEDURES FOR ASSAULT KITCHEN

TROUBLESHOOTING INDEX

The malfunction symptom index lists common malfunctions that may occur during Assault Kitchen inspections and operations. Find the malfunction to be eliminated and go to the indicated troubleshooting work package that follows. For personnel authorized to perform operator maintenance, refer to WP 0009 to perform operator maintenance. For service maintenance personnel, refer to operator maintenance WP 0009 to perform operator maintenance first. If after performing operator level troubleshooting the malfunction is not corrected, refer to WP 0010, field maintenance troubleshooting work package.

The index cannot list all malfunctions that may occur, all tests or inspections needed to find the fault, nor all actions required to correct the fault. If the existing malfunction is not listed, or cannot be corrected through this troubleshooting index, notify service maintenance.

Table 1. Malfunction Symptom Index.

Symptom	Operator Maintenance Troubleshooting Work Package/Page No.	Field Maintenance Troubleshooting Work Package/Page No.
1. With Pull-ON/Push-OFF knob in the ON position and the TRH Pull-ON/Push-OFF indicator light not lit, nothing happens.	WP 0009	WP 0010
2. With Pull-ON/Push-OFF knob in the ON position and the TRH Pull-ON/Push-OFF indicator light lit, nothing happens.	WP 0009	N/A
3. With Pull-ON/Push-OFF knob in the ON position, TRH attempts to start but does not or TRH is running normally and then stops.	WP 0009	WP 0010
4. TRH Burner does not install in TRH Tank.	WP 0009	WP 0010
5. Fuel has leaked out of the system.	WP 0009	WP 0010
6. Excess steam when TRH lid is closed.	WP 0009	WP 0010
7. TRH Burner emits smoke.	WP 0009	WP 0010
8. TRH Burner motor makes scraping noise.	WP 0009	WP 0010

END OF WORK PACKAGE

OPERATOR AND FIELD MAINTENANCE

OPERATOR TROUBLESHOOTING PROCEDURES

INITIAL SETUP:

Tools and Special Tools	Personnel Required
AK Tool Box (WP 0069, Item 3)	Food Service Specialist 92G (2)
Materials/Parts	**References**
Absorbent Material, Oil and Water (WP 0068, Item 1) Gloves, Chemical and Oil Protective (WP 0068, Item 9) Rag, Wiping (WP 0068, Item 13)	FM 21-11 WP 0016, 0018, 0019, 0021, 0022, 0026, 0027,0028, 0039

TROUBLESHOOTING PROCEDURE

TRAY RATION HEATER (TRH)

SYMPTOM

With pull-on/push-off knob in the ON position and the TRH pull-on/push-off indicator light not lit, nothing happens.

MALFUNCTION

Electrical power from the source to the TRH burner has been interrupted.

CORRECTIVE ACTION

STEP 1. On the TRH tank, check the following:

WARNING

HIGH VOLTAGE is used in the operation of this equipment. Never work on electrical equipment alone. Maintenance personnel should be familiar with the operation and hazards of the equipment. **DEATH ON CONTACT** may result if personnel fail to observe safety precautions.

For artificial respiration, refer to FM 21-11.

Do not stand in water while handling live power cords or electrical shock may result. Position all power cables so that they are out of the way during operation and are not in water.

a. Ensure twist lock power connection from power cord to TRH tank is secure and properly connected. Reconnect an unsecured connection.

b. Ensure circuit breaker on TRH tank is not tripped by depressing the circuit breaker reset button.

TROUBLESHOOTING PROCEDURE – CONTINUED

STEP 2. Following the power cord from the TRH tank to the power source, check:

a. TRH power cord for obvious signs of damage. If damaged, replace the TRH power cord IAW WP 0021.

b. TRH power cord connection to Inverter GFCI outlet (Figure 1, Item 3) for secure connection. Reconnect an unsecured connection.

STEP 3. On the TRH Inverter, perform the following checks:

a. Verify power connections to vehicle are secure. Reconnect an unsecured connection.

b. Ensure TRH Power Inverter power on/off switch is in ON position (Figure 1, Item 3).

c. Ensure green Inverter LED is lit (Figure 1, Item 4).

a. If red Low Battery LED is lit (Figure 1, Item 1) or no LED is lit, start the HMMWV and run the motor to recharge the vehicle battery.

d. Press the reset button on the GFCI receptacle (Figure 1, Item 2) and TRH Inverter output breaker.

e. Replace TRH Inverter.

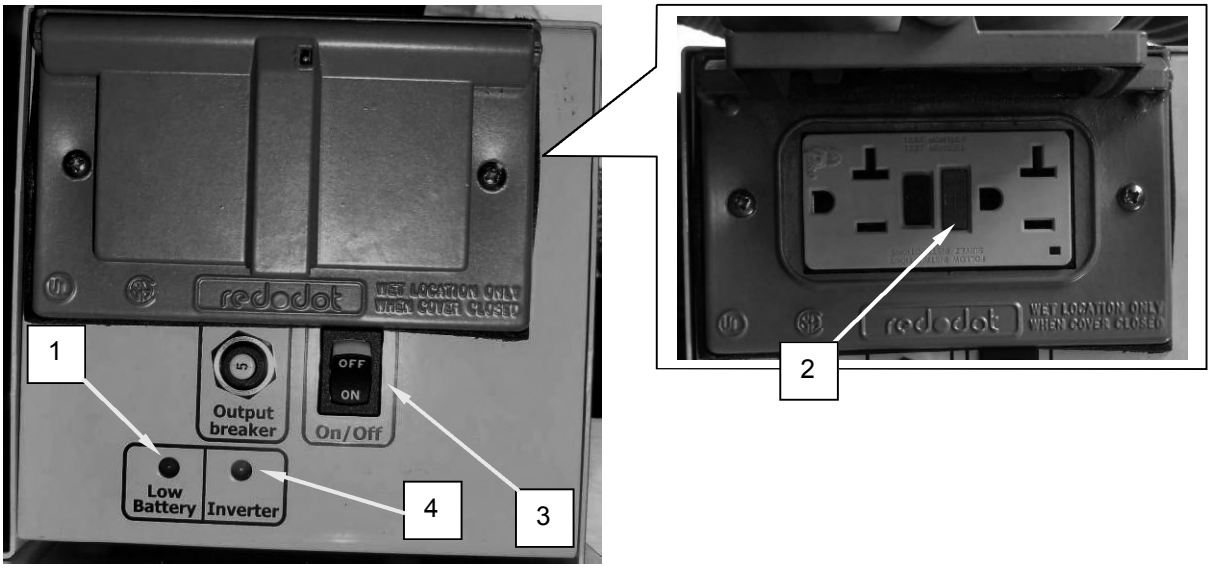


Figure 1. TRH Inverter GFCI Outlet.

STEP 4. Test the TRH power cord by using a different TRH power cord, if available.

a. If using a different TRH power cord fixes the problem, replace the TRH power cord IAW WP 0021.

STEP 5. At this point in the troubleshooting process, the operator has completed the checks that are authorized. Refer TRH tank to service maintenance to continue troubleshooting the AK.

TROUBLESHOOTING PROCEDURE – CONTINUED

SYMPTOM

With pull-on/push-off knob in the ON position and the TRH pull-on/push-off indicator light lit, nothing happens.

MALFUNCTION

Electrical power from the TRH tank to the TRH burner has been interrupted.

CORRECTIVE ACTION

STEP 1. Check the TRH burner control box amber light.

a. If the TRH burner control box amber light is lit, refer to step 4.

STEP 2. Check TRH tank for the following:

a. Water level should be above low water sensor.

a. If water level is below the low water sensor, add water so that water level rises to approximately 2 inches from the top of the water tank.

b. If water level is above the low water sensor, or adding water to the tank does not fix the problem, ensure that the low water sensor is clean IAW WP 0016.

b. Use a pocket thermometer from the utensil kit to measure TRH tank water temperature. Temperature should be below 190° F.

WARNING

Never use the BOIL mode to prepare rations because it bypasses built-in safety features and may cause personnel to be burned by vented steam or scalding can contents. Never leave the TRH unattended when operating in the BOIL mode. Water may boil over, causing injury to personnel.

(1) If water temperature is above 190° F, the TRH should not attempt to start. This is a safety feature. To test TRH, set the TRH tank toggle switch to the BOIL mode. The TRH should start.

c. Ensure TRH tank is not tilted past 30 degrees (one skid elevated more than 1 foot above the other). If TRH tank is tilted past 30 degrees, the tilt switch in the TRH tank will disable TRH operations until TRH tank is returned to a level state. This is a safety feature of the TRH and not a malfunction.

STEP 3. Lift TRH burner cover and visually inspect the power connection between the TRH tank and the TRH burner to ensure the power plug connection is secure. If not secured, attach the TRH burner power plug connection using the retaining screw on the TRH burner power plug.

STEP 4. Remove TRH burner from TRH tank IAW WP 0026.

a. Check to ensure photocell is properly installed IAW WP 0028.

b. Replace TRH burner in TRH tank IAW WP 0026.

STEP 5. Remove the TRH burner control box and install spare TRH burner control box from maintenance kit IAW WP 0027.

a. If the TRH functions properly with the new TRH burner control box installed, the malfunction was with the old TRH burner control box. Turn-in the old TRH burner control box.

TROUBLESHOOTING PROCEDURE – CONTINUED

STEP 6. Use the TRH burner diagnostic test box to determine if the problem is with the TRH tank electronics or TRH burner.

a. To determine which component is malfunctioning, push TRH tank pull-on/push-off knob to the OFF position, and replace the burner control box with the diagnostic test box.

(1) Remove the TRH burner control box from the TRH burner (Figure 2, Item 1) by loosening the retaining screw and pulling control box away from TRH burner.

WARNING

When using the diagnostic test box to test the TRH burner, be careful to observe the condition of the test switches on the test box. All switches shall be in the OFF (O) position. Failure to observe this warning may cause unexpected TRH burner start-up resulting in injury or death to personnel.

(2) Install diagnostic test box (Figure 2, Item 2) on TRH burner and secure using the integral screw (Figure 2, Item 3).

(3) Pull TRH tank pull-on/push-off knob to ON position.

i. If amber colored LINE light (Figure 2, Item 4) on diagnostic test box is lit, the TRH tank electronics are working properly, and the malfunction exists in the TRH burner. Remove TRH burner IAW WP 0026, and replace with spare TRH burner in maintenance kit. Refer malfunctioning TRH burner and maintenance kit to service maintenance.

ii. If amber colored LINE light (Figure 2, Item 4) on diagnostic test box is not lit, the malfunction exists in the TRH tank electronics. Refer TRH tank to service maintenance.

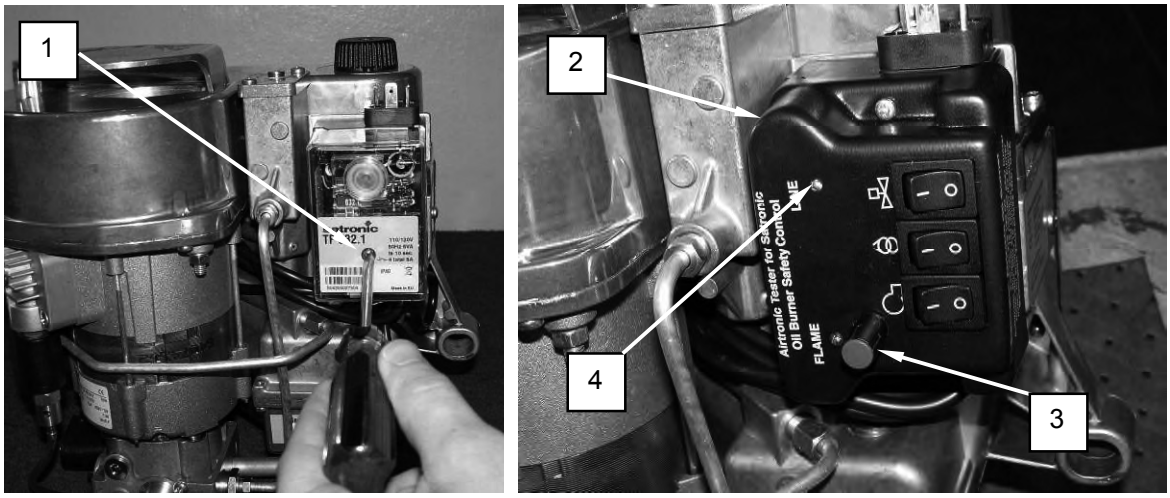


Figure 2. Replacing Electrical Control Box with Diagnostic Test Box.

TROUBLESHOOTING PROCEDURE – CONTINUED

SYMPTOM

With pull-on/push-off knob in the ON position, TRH attempts to start but does not, or TRH is running normally and then stops.

MALFUNCTION

Fuel flow problems have stopped the TRH during operation or have prevented the TRH from starting properly.

CORRECTIVE ACTION

STEP 1. Check status of TRH burner control box for lock-out (amber light on TRH burner control box is lit). If TRH burner is not locked out, fuel flow problems have been ruled out. Proceed to the next malfunction to continue troubleshooting. If TRH burner is locked out, proceed to STEP 2.

STEP 2. Wait 60 seconds to allow the TRH burner to cool down, Remove cover and attempt to restart the TRH by pushing the reset button on the TRH burner control box (Figure 3, Item 1).

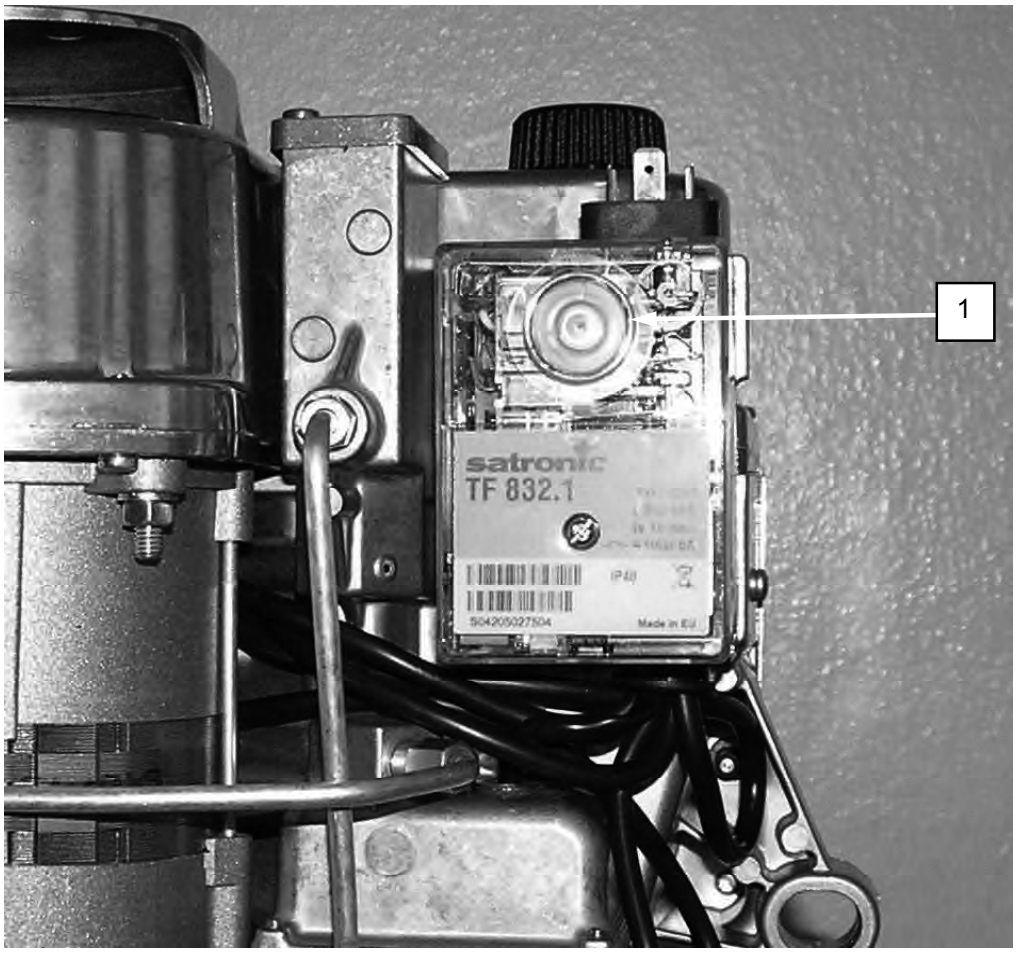


Figure 3. TRH Control Box Reset Button.

TROUBLESHOOTING PROCEDURE – CONTINUED

WARNING

Do not attempt to connect a fuel line to the TRH in the vicinity of any open flame. Ensure that the fuel hose connections are made properly to avoid fuel spillage. Prevent a possible fire hazard by having absorbent materials or fuel mats on hand to absorb any spillage. Failure to observe safety precautions may result in injury or death to personnel.

STEP 3. Repeat the previous step while depressing the starting button inlet valve for 10 seconds (Figure 4, Item 2). Simultaneously close off the finger priming port (Figure 4, Item 1) with a finger to further enhance the priming process. Repeat for up to 3 attempts.

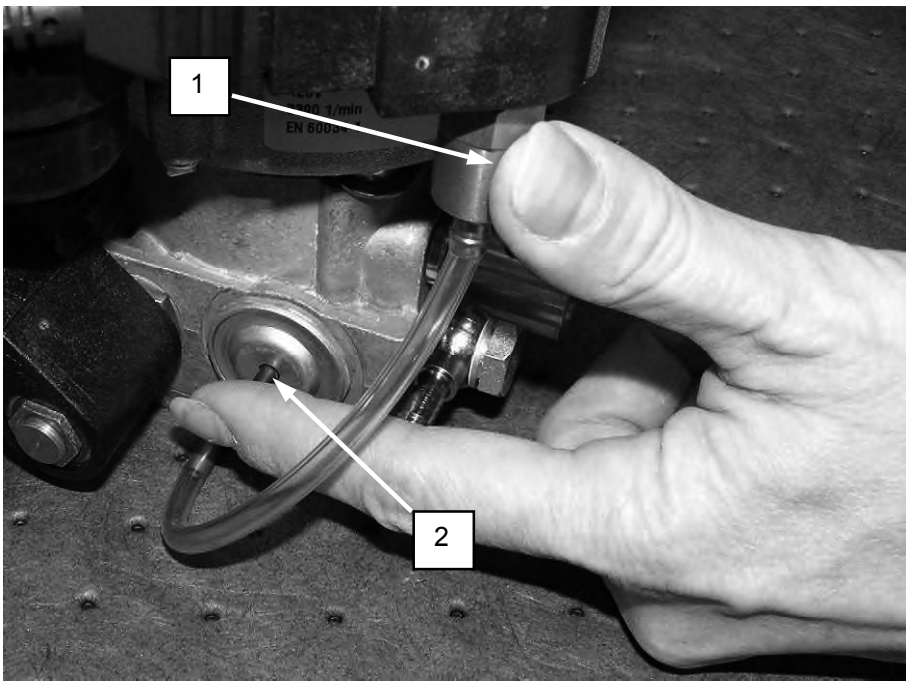


Figure 4. Priming Procedure.

STEP 4. Troubleshoot the fuel delivery system from the fuel can to the TRH burner by checking the following:

a. Ensure fuel level in fuel can is at least 1/4 of fuel can. Fill as necessary.

b. Fuel can adapter properly installed on fuel can (WP 0018) and not damaged. Replace a damaged fuel can adapter (WP 0018).

c. Fuel can adapter plastic dip tube installed correctly (WP 0018) and not kinked or damaged. Replace a damaged dip tube and reconnect any unsecured connection.

d. Fuel line cut, damaged, bent, or kinked. Replace a defective fuel line.

TROUBLESHOOTING PROCEDURE – CONTINUED

e. Quick disconnect (QD) fuel line connection on TRH tank is properly connected and not damaged. If damaged, replace the fuel line. Check that fuel can is connected properly, with fuel filter on the fuel line installed closest to the fuel can.

f. Ensure TRH internal fuel line connection from TRH tank to TRH burner is properly connected. Reconnect an unsecured connection.

g. Ensure fuel filter hose clamps are properly installed (tightened enough to keep fuel from escaping, but not so tight that fuel flow is impeded). Adjust hose clamps as necessary.

h. Check fuel filters for clogs or damage to filters. Replace any clogged or damaged fuel filter (WP 0019).

i. Ensure fuel and air settings on burner are set properly. TRH burner should be set to M on fuel control knob (Figure 5, Item 1). The dot (Figure 5, Item 3) on the flow control points to the desired setting. The air control knob (Figure 5, Item 2) should be set to 10. Adjust fuel and air control settings as necessary.

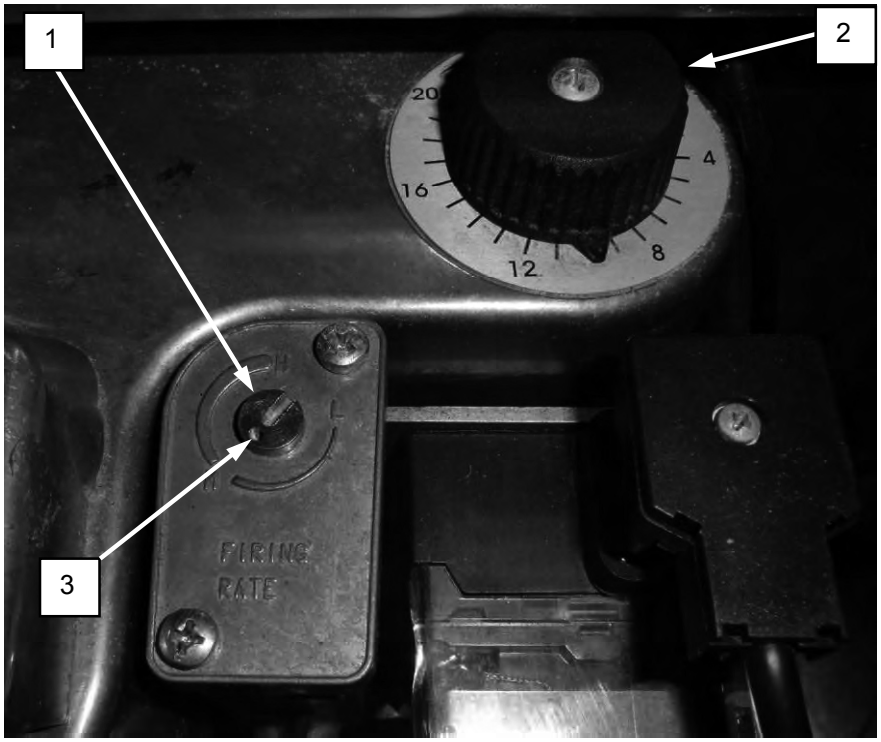


Figure 5. Fuel Flow and Air Flow Controls.

j. At this point in the troubleshooting process fuel flow problems have been ruled out. Proceed to the next malfunction to continue troubleshooting.

TROUBLESHOOTING PROCEDURE – CONTINUED

MALFUNCTION

The photocell on the TRH burner is misaligned or improperly installed causing the TRH burner to lock out.

CORRECTIVE ACTION

STEP 1. Remove TRH burner cover and remove TRH burner IAW WP 0026 but do not drain the fuel.

STEP 2. Check the photocell (Figure 6, Item 1) on the TRH burner for proper alignment and installation. Verify alignment IAW WP 0026 and reinstall if necessary.

STEP 3. Attempt to operate the TRH using another photocell from the TRH maintenance kit or spare TRH burner. Do not turn in the original photocell unless the TRH operates properly with the replacement photocell.

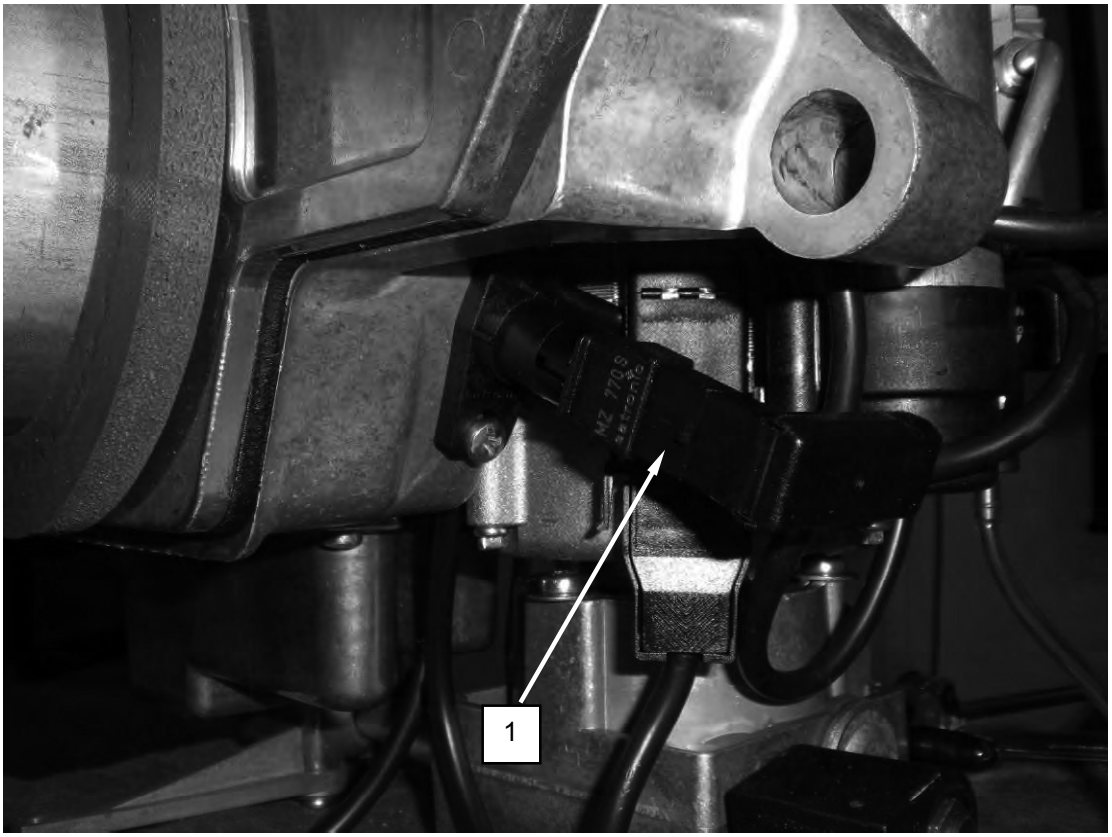


Figure 6. Photocell Orientation.

STEP 4. At this point in the troubleshooting process photocell alignment problems have been ruled out, proceed to the next malfunction to continue troubleshooting.

TROUBLESHOOTING PROCEDURE – CONTINUED

MALFUNCTION

The TRH burner control box has malfunctioned due to damage, corrosion, or moisture.

CORRECTIVE ACTION

WARNING

HIGH VOLTAGE is used in the operation of this equipment. Never work on electrical equipment alone. Maintenance personnel should be familiar with the operation and hazards of the equipment. **DEATH ON CONTACT** may result if personnel fail to observe safety precautions.

For artificial respiration, refer to FM 21-11.

Do not stand in water while handling live power cords or electrical shock may result. Position all power cables so that they are out of the way during operation and are not in water.

STEP 1. Remove the TRH burner cover and check the TRH burner control box (Figure 3) for obvious signs of damage, corrosion, or internal dampness. Replace a damaged, corroded, or water damaged TRH burner control box (WP 0027).

STEP 2. Remove the TRH burner control box and install a spare TRH burner control box (WP 0027) from the maintenance kit.

a. If the TRH functions properly with the spare TRH burner control box installed, the malfunction was with the old TRH burner control box. Check for moisture or damage. If moisture exists, dry out using heat source. Install and check status of control box. If it still does not function properly, discard and replace with serviceable TRH burner control box.

b. Check status of replacement TRH burner control box for lock-out (amber light on TRH burner control box is lit). If TRH burner is locked out, replace TRH burner with spare TRH burner from the maintenance kit and refer malfunctioning TRH burner to service maintenance.

STEP 3. At this point in the troubleshooting process, if the TRH burner control box is not locked out (amber light on TRH burner control box is not lit), the malfunction cannot be determined, proceed to the next malfunction to continue troubleshooting.

TROUBLESHOOTING PROCEDURE – CONTINUED

MALFUNCTION

TRH attempts to start but does not or TRH is running normally and then stops with pull-on/push-off indicator light not lit signifying electrical problems between the power source and TRH burner have stopped the TRH during operation or have prevented the TRH from starting properly.

CORRECTIVE ACTION

STEP 1. Check the TRH tank by checking the following:

WARNING

HIGH VOLTAGE is used in the operation of this equipment. Never work on electrical equipment alone. Maintenance personnel should be familiar with the operation and hazards of the equipment. **DEATH ON CONTACT** may result if personnel fail to observe safety precautions.

For artificial respiration, refer to FM 21-11.

Do not stand in water while handling live power cords or electrical shock may result. Position all power cables so that they are out of the way during operation and are not in water.

a. Twist-lock power connection connecting power cord to TRH tank is secure and properly connected. Reconnect an unsecured connection.

b. Ensure circuit breaker on TRH tank is not tripped by depressing the circuit breaker reset button.

STEP 2. Following the power cord from the TRH tank to the inverter, check:

a. TRH power cord for obvious signs of damage. If damaged, replace the TRH power cord (WP 0021).

b. Power connection to Power Inverter GFCI outlet for secure connection. Reconnect an unsecured connection.

STEP 3. On the TRH Inverter, perform the following checks:

a. Verify power connections to vehicle are secure. Reconnect an unsecured connection.

b. Ensure TRH Power Inverter ON/OFF switch is in ON position.

c. Ensure green Inverter LED is lit.

(1) If red Low Battery LED is lit or no LED is lit, start the HMMWV and run the motor to recharge the vehicle battery.

d. Press the reset button on the GFCI receptacle and TRH Inverter output breaker.

e. Replace TRH Inverter (WP 0039).

STEP 4. Test the TRH power cord by using a different TRH power cord.

a. If using a different TRH power cord fixes the problem, replace the TRH power cord (WP 0021).

TROUBLESHOOTING PROCEDURE – CONTINUED

MALFUNCTION

TRH attempts to start but does not, or TRH is running normally and then stops with pull-on/push-off indicator light lit signifying electrical problems between the TRH tank and TRH burner have stopped the TRH during operation or have prevented the TRH from starting properly.

CORRECTIVE ACTION

STEP 1. Check TRH tank for the following:

a. Ensure TRH tank water level is above low water sensor.

(1) If TRH tank water level is below the low water sensor, add water to TRH tank so that water level is approximately 2 inches from the top of the water tank.

(2) If water level is already above the low water sensor, or adding water to the tank does not fix the problem, ensure that the low water sensor is clean IAW WP 0016.

b. Use a pocket thermometer to measure TRH tank water temperature. Temperature should be below 180° F.

WARNING

Never use the BOIL mode to prepare rations because it bypasses built-in safety features and may cause personnel to be burned by vented steam or scalding can contents. Never leave the TRH unattended when operating in the BOIL mode. Water may boil over, causing injury to personnel.

(1) If water temperature is above 180 °F, the TRH should not attempt to start. This is a safety feature. To bypass the safety feature of the TRH, set the TRH tank toggle switch to the BOIL mode. The TRH should start.

c. Ensure TRH tank is not tilted past 30 degree (one skid elevated more than 1 foot above the other). If TRH tank is tilted past 30 degrees, the tilt switch in the TRH tank will disable TRH operations until TRH tank is returned to a level state. This is a safety feature of the TRH and not a malfunction

STEP 2. Visually inspect the power connection between the TRH tank and the TRH burner to ensure the power plug connection is secure. If not secured, attach the TRH burner power plug connection using the retaining screw on the TRH burner power plug.

STEP 3. Remove TRH burner from TRH tank IAW WP 0026 but do not drain fuel.

a. Check to ensure photocell is properly installed (WP 0028). Adjust photocell installation as necessary.

b. Replace TRH burner in TRH tank IAW WP 0026.

STEP 4. Use the TRH burner diagnostic test box to determine if the problem is with the TRH tank electronics or TRH burner.

TROUBLESHOOTING PROCEDURE – CONTINUED

WARNING

Ensure TRH pull-on/push-off knob is in the OFF position before replacing the TRH burner control box. Failure to observe this warning may result in injury or death to personnel.

a. Remove the electrical control box from the TRH burner by loosening the retaining screw (Figure 7, Item 1) and pulling TRH burner control box away from TRH burner.

WARNING

When using the diagnostic test box to test the TRH burner, be careful to observe the condition of the test switches on the test box. All switches shall be in the OFF (0) position. Failure to observe this warning may cause unexpected TRH burner start-up resulting in injury or death to personnel.

b. Install diagnostic test box (Figure 7, Item 4) on TRH burner and secure using the integral screw (Figure 7, Item 3).

c. Pull TRH tank red pull-on/push-off knob to ON position.

(1) If amber colored LINE light (Figure 7, Item 2) on diagnostic test box is lit, the TRH tank electronics are working properly and the malfunction exists in the TRH burner. Remove TRH burner IAW WP 0026 and replace with spare TRH burner in maintenance kit. Refer malfunctioning TRH burner and maintenance kit to service maintenance.

(2) If amber colored LINE light (Figure 7, Item 2) on diagnostic test box is not lit, the malfunction exists in the TRH tank electronics. Refer TRH tank to service maintenance.

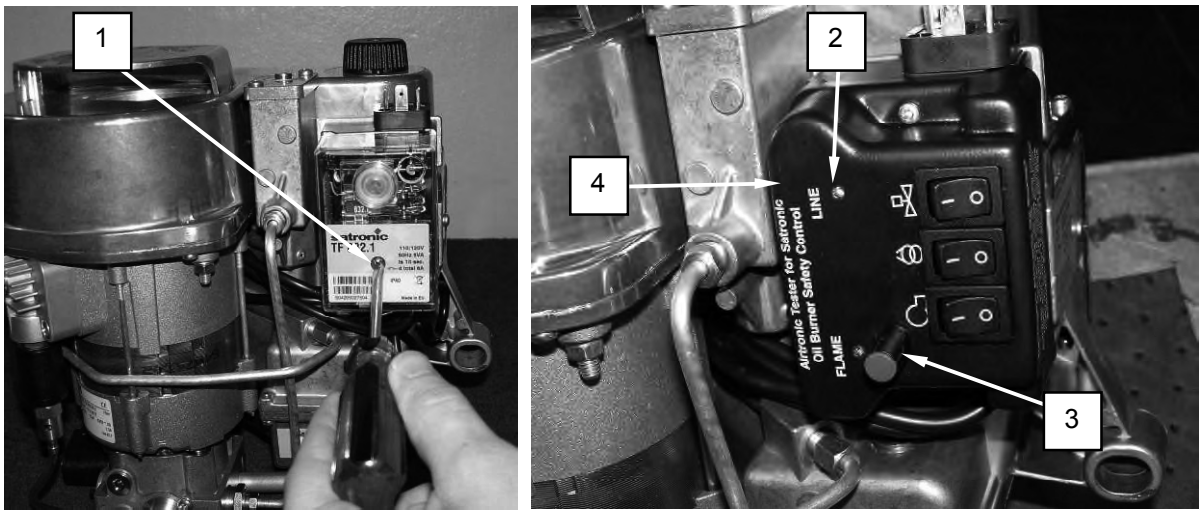


Figure 7. Replacing Electrical Control Box with Diagnostic Test Box.

TROUBLESHOOTING PROCEDURE – CONTINUED

SYMPTOM

TRH burner does not install in TRH tank.

MALFUNCTION

The TRH tank is damaged so that TRH burner will not fit in burner housing.

CORRECTIVE ACTION

STEP 1. Lift TRH burner cover and visually check the alignment of the TRH tank saddle pins located inside the TRH tank burner housing. Using mechanical means, align saddle pins so that TRH burner can slide into TRH tank burner housing.

STEP 2. Check TRH tank burner housing for damage.

a. If TRH tank burner housing is bent or dented, attempt to repair damage using TRH tool kit so that TRH burner is able to be installed in TRH tank.

b. If TRH tank burner housing cannot be repaired by TRH Tool kit, and the operator has completed the checks authorized, refer to service maintenance to continue troubleshooting the TRH tank.

MALFUNCTION

The TRH burner was improperly assembled or damaged so that it will not fit in the TRH tank or will not assemble properly.

CORRECTIVE ACTION

STEP 1. At this point in the troubleshooting process, the operator has completed the checks that they are authorized to perform. Refer TRH burner to service maintenance to continue troubleshooting the TRH burner.

SYMPTOM

Fuel leak.

WARNING

Do not attempt to connect a fuel line to the TRH in the vicinity of any open flame. Ensure that the fuel hose connections are made properly to avoid fuel spillage. Prevent a possible fire hazard by having absorbent materials or fuel mats on hand to absorb any spillage. Failure to observe safety precautions may result in injury or death to personnel.

MALFUNCTION

Fuel has leaked out of the system.

CORRECTIVE ACTION

STEP 1. Check the fuel can and fuel can adapter as follows:

a. Check the fuel can for cracks or other damage that would allow fuel to leak from the fuel can.

b. Check the fuel can adapter for proper installation or damage.

c. Check the QD fitting connecting the fuel can adapter to the fuel hose for secure connection.

TROUBLESHOOTING PROCEDURE – CONTINUED

STEP 2. Check the fuel hose as follows:

a. Check the fuel hose for cuts, cracks, or holes that would allow fuel to leak out of the fuel hose.

b. Check the in-line fuel filter on the fuel hose for the following:

(1) Cracks or holes in the filter that would allow fuel to leak out of the fuel filter casing.

(2) Improperly installed hose clamps. Hose clamps should be tight enough to retain fuel filter to fuel hose without allowing fuel leaks but not so tight that fuel flow is restricted.

(3) Check to ensure fuel filter is not dirty or clogged. Replace unserviceable fuel filter IAW WP 0019.

c. Check all QD fittings on the fuel hose for secure connection.

STEP 3. Check the TRH tank as follows:

a. Check the QD fitting connecting the fuel hose to the TRH tank for secure connection.

b. Check the internal fuel hose in the TRH burner housing for cuts, cracks, or holes that would allow fuel to leak out of the fuel hose.

c. Check the in line fuel filter on the internal fuel hose in the TRH burner housing for the following:

(1) Cracks or holes in the filter that would allow fuel to leak out of the fuel filter casing.

(2) Improperly installed hose clamps. Hose clamps should be tight enough to retain fuel filter to fuel hose without allowing fuel leaks but not so tight that fuel flow is restricted.

(3) Check to ensure fuel filter is not dirty or clogged. Replace unserviceable fuel filter IAW WP 0019.

TROUBLESHOOTING PROCEDURE – CONTINUED

STEP 4. Check the TRH burner as follows:

a. Check the connection between the internal fuel hose to the TRH burner for secure connection.

b. Check the TRH burner fuel sump plug (Figure 8, Item 1) for proper installation.

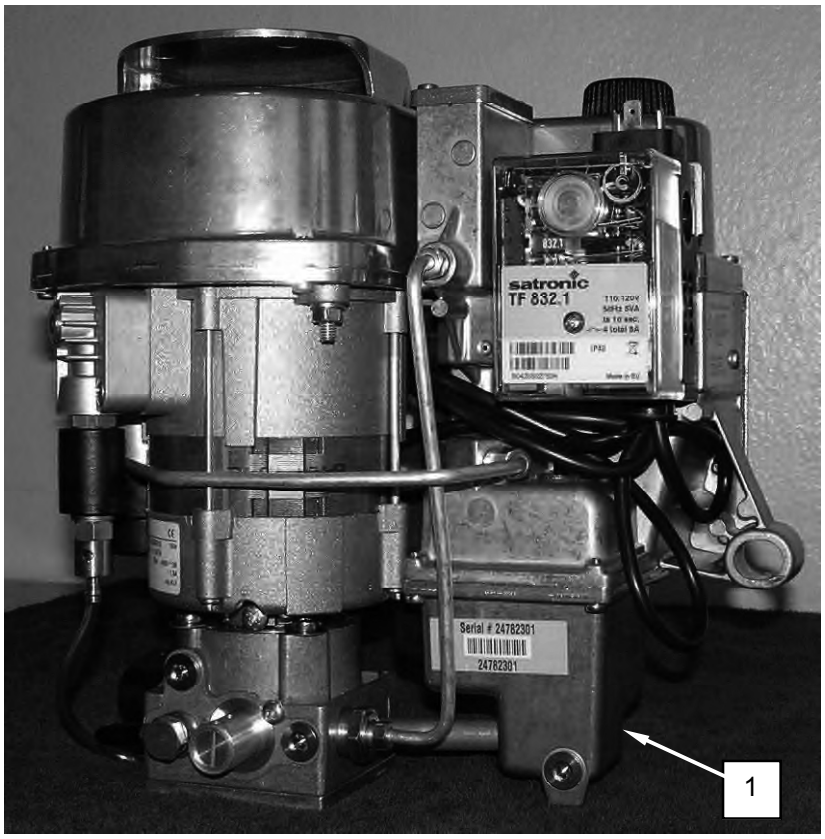


Figure 8. Fuel Sump Plug.

STEP 5. At this point in the troubleshooting process, the operator has completed the checks that are authorized. Refer to TRH tank to service maintenance to continue troubleshooting.

TROUBLESHOOTING PROCEDURE – CONTINUED

SYMPTOM

Excess steam when TRH lid is closed.

MALFUNCTION

TRH is set to incorrect mode of operation.

CORRECTIVE ACTION

WARNING

Never use the BOIL mode to prepare rations because it bypasses built in safety features and may cause personnel to be burned by vented steam or scalding can contents. Never leave the TRH unattended when operating in the BOIL mode. Water may boil over causing injury to personnel.

The pressure relief port on the back side of the TRH tank lid vents hot steam. Use caution when working near the TRH tank when in operation, because the high pressure steam that is vented may burn or scald personnel. Failure to observe this warning may result in injury or death to personnel. Wait 10 minutes for tank to cool or steam to dissipate

STEP 1. Check TRH tank toggle switch (Figure 9, Item 1) to ensure TRH is set to AUTO mode.

a. If toggle switch is set to BOIL mode, place toggle switch in AUTO mode and observe tank operation. Excess steam should slowly reduce until there is a normal amount of steam. If steam is not reduced by placing TRH tank in AUTO mode, proceed to next step in troubleshooting process.

Figure 9. TRH Tank Toggle Switch.

TROUBLESHOOTING PROCEDURE – CONTINUED

MALFUNCTION

TRH tank lid is damaged or improperly aligned.

CORRECTIVE ACTION

STEP 1. Adjust TRH tank lid latches (WP 0022).

STEP 2. At this point in the troubleshooting process, the operator has completed the checks that they are authorized to perform. Refer TRH tank to service maintenance to continue troubleshooting.

SYMPTOM

TRH burner emits smoke.

WARNING

Do not attempt to connect a fuel line to the TRH in the vicinity of any open flame. Ensure that the fuel hose connections are made properly to avoid fuel spillage. Prevent a possible fire hazard by having absorbent materials or fuel mats on hand to absorb any spillage. Failure to observe safety precautions may result in injury or death to personnel.

MALFUNCTION

Incorrect TRH burner settings or residual fuel in TRH burner flame tube cause the TRH burner to emit excess smoke out of the TRH tank exhaust port.

CORRECTIVE ACTION

WARNING

Do not tip burner tube of TRH downward while installing or removing because the fuel will drip out of flame tube. Failure to observe safety precautions may result in injury or death to personnel.

STEP 1. Remove TRH burner cover and ensure fuel and air settings on burner are set properly (M on fuel control knob and 10 on air control knob). The dot on the flow control points to the desired setting. Adjust fuel and air control settings as necessary and wait 10 minutes. If problem persists, proceed to the next step.

STEP 2. Remove TRH burner from TRH tank (WP 0026) but do not drain fuel.

STEP 3. Ensure TRH burner flame tube is clean of fuel. If fuel is present, clean with a rag or cloth.

STEP 4. Replace TRH burner in TRH tank (WP 0026).

STEP 5. At this point in the troubleshooting process, the operator has completed the checks that are authorized. Replace TRH burner with spare from maintenance kit IAW WP 0026 and refer TRH burner to service maintenance to continue troubleshooting.

TROUBLESHOOTING PROCEDURE – CONTINUED

SYMPTOM

TRH burner motor makes scraping noise.

MALFUNCTION

Damage, obstructions, or improper installation has caused the TRH burner motor to scrape against the TRH burner.

CORRECTIVE ACTION

STEP 1. Observe TRH burner upper fan housing (Figure 10, Item 1) for obstructions that would impede the operations of the motor blower. Remove any obstructions if possible.

Figure 10. TRH Burner Upper Fan Housing.

STEP 2. At this point in the troubleshooting process, the operator has completed the checks that are authorized. Replace TRH burner with spare from maintenance kit IAW WP 0026 and refer TRH burner to service maintenance to continue troubleshooting.

END OF WORK PACKAGE

OPERATOR AND FIELD MAINTENANCE

MAINTAINER TROUBLESHOOTING PROCEDURES

INITIAL SETUP:

Tools and Special Tools

AK Tool Box (WP 0069, Item 3)

Personnel Required

Quartermaster Equipment Repairer 91J (1)

Materials/Parts

Chemical and Oil Protective Gloves (WP 0069, Item 9)
Industrial Goggles (WP 0069, Item 10)

Insulated Wire
Oil and Water Absorbent Material (WP 0069, Item 1)
Wiping Rag (WP 0069, Item 13)

References

FM 21-11

WP 0009, 0011, 0022, 0026, 0030, 0031, 0032, 0036, 0037, 0038, 0042, 0047

TROUBLESHOOTING PROCEDURE

TRAY RATION HEATER (TRH)

To Troubleshoot the TRH, the service maintainer shall perform the operator troubleshooting checks described in WP 0009 to eliminate any malfunctions that the operator may have missed. After verifying that the operator troubleshooting checks have been correctly performed, move on to the service maintenance troubleshooting checks. Prior to replacing components it is recommended that continuity checks be performed to verify serviceability.

WARNING

HIGH VOLTAGE is used in the operation of this equipment. Never work on electrical equipment alone. Maintenance personnel should be familiar with the operation and hazards of the equipment. **DEATH ON CONTACT** may result if personnel fail to observe safety precautions.

For artificial respiration, refer to FM 21-11.

Do not stand in water while handling live power cords or electrical shock may result. Position all power cables so that they are out of the way during operation and are not in water.

SYMPTOM

With Pull-ON/Push-OFF knob in the ON position and the TRH Pull-ON/Push-OFF indicator light not lit, nothing happens.

MALFUNCTION

TRH Tank malfunctions have disabled electrical power delivery to the TRH Burner.

TROUBLESHOOTING PROCEDURE - CONTINUED

CORRECTIVE ACTION

STEP 1. Verify that the problem is with the TRH tank electronics.

a. To determine which component is malfunctioning, replace the burner control box with the diagnostic test box.

(1) Remove the TRH burner control box from TRH burner (Figure 1, Item 1).

(2) Install diagnostic test box (Figure 1, Item 2) on burner and secure using the integral screw (Figure 1, Item 3).

(3) Pull TRH tank red Pull-ON/Push-OFF knob to ON position.

(4) If amber colored LINE light (Figure 1, Item 4) on diagnostic test box is lit, the TRH tank electronics are working properly and the malfunction exists in the TRH burner. Bench test TRH Burner (WP 0011).

(5) If amber colored LINE light (Figure 1, Item 4) on test box is not lit, the malfunction exists in the TRH tank electronics. Proceed to STEP 2.

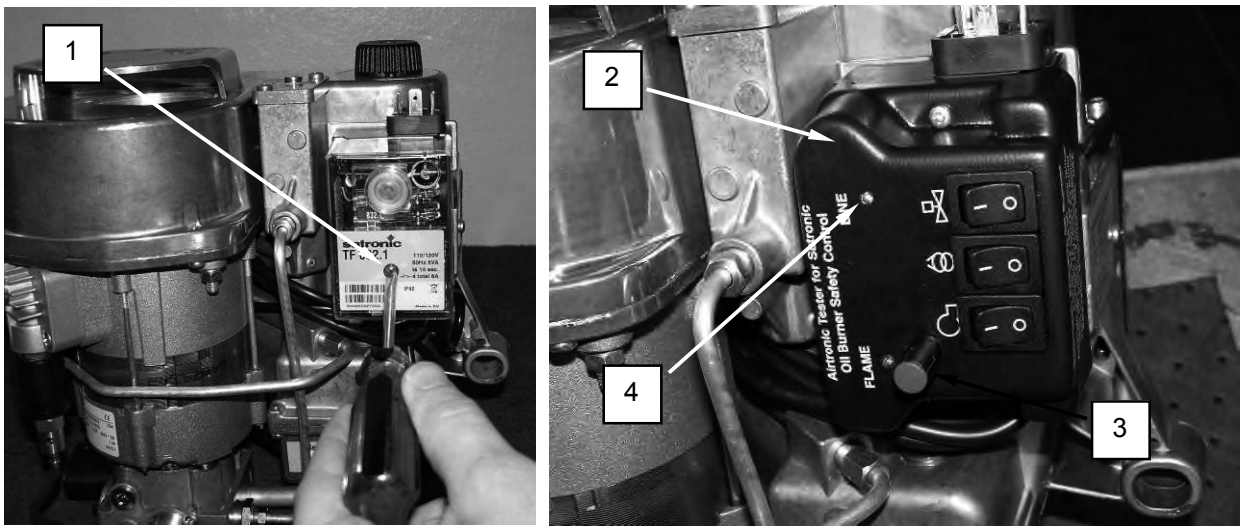


Figure 1. Replacing Electrical Control Box With Diagnostic Test Box.

TROUBLESHOOTING PROCEDURE - CONTINUED

STEP 2. Fabricate a jumper wire by cutting a piece of insulated solid copper wire (Figure 2, Item 1) 8 inches in length and strip 1/4-inch of insulation from both ends.

STEP 3. To check electrical components the TRH burner must be installed and connected IAW WP 0026 for troubleshooting on the vehicle or connected to local power if troubleshooting is performed off the vehicle. Verify the red Pull-ON/Push-OFF switch is in the ON position. Verify the TRH tank is filled with enough water below 150°F so that the low water sensor is completely covered.

a. Remove TRH electronic control box cover by removing and retaining cover attachment screws.

STEP 4. Touch one end of the test wire (Figure 2, Item 1) to terminal no. 2 of the terminal strip (Figure 2, Item 2), and touch the other end of the test wire to terminal no. 3 of the terminal strip (Figure 2, Item 2).

a. If the amber colored LINE light on diagnostic test box illuminates, indicating proper burner operation, replace the circuit breaker (WP 0032).

STEP 5. Touch one end of the test wire (Figure 2, Item 1) to terminal no. 2 of the terminal strip (Figure 2, Item 2), and touch the other end of the test wire to terminal no. 4 of the terminal strip (Figure 2, Item 2).

a. If the amber colored LINE light on the diagnostic test box illuminates, indicating proper burner operation, replace the red Pull-ON/Push-OFF switch (WP 0031).

STEP 6. Touch one end of the test wire (Figure 2, Item 1) to terminal no. 2 of the terminal strip (Figure 2, Item 2), and touch the other end of the test wire to terminal no. 5 of the terminal strip (Figure 2, Item 2).

a. If the amber colored LINE light on the diagnostic test box illuminates, indicating proper burner operation, replace the tank tilt switch (WP 0037).

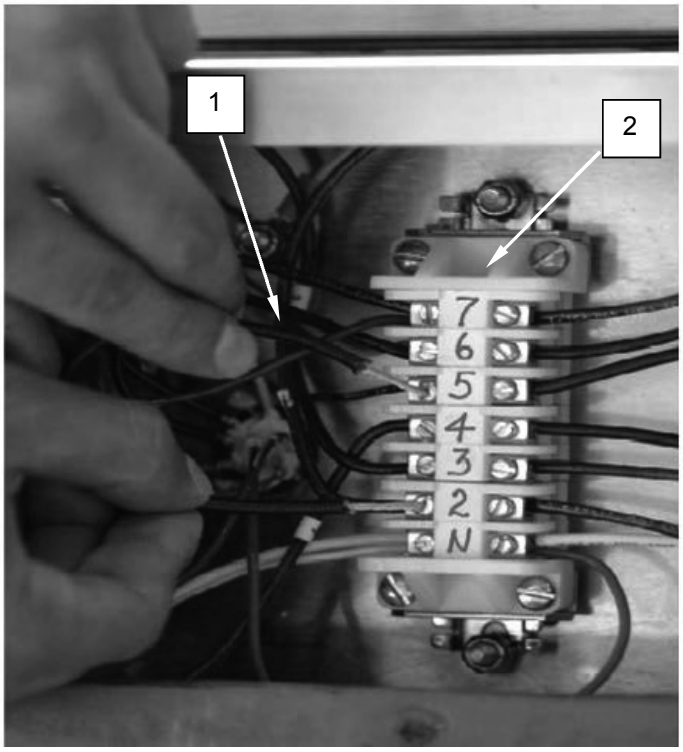


Figure 2. TRH Tank Terminal Strip.

TROUBLESHOOTING PROCEDURE - CONTINUED

STEP 7. Touch one end of the test wire (Figure 3, Item 1) to terminal no. 2 of the terminal strip (Figure 3, Item 2), and touch the other end of the test wire to terminal no. 6 of the terminal strip (Figure 3, Item 2).

a. If the amber colored LINE light on the diagnostic test box illuminates, indicating proper burner operation, replace the Martron probe sensor (WP 0037).

STEP 8. Touch one end of the test wire (Figure 3, Item 1) to terminal no. 2 of the terminal strip (Figure 3, Item 2), and touch the other end of the test wire to terminal no. 7 of the terminal strip (Figure 3, Item 2).

a. If the amber colored LINE light illuminates, indicating proper burner operation, replace the thermal resistor (WP 0038).

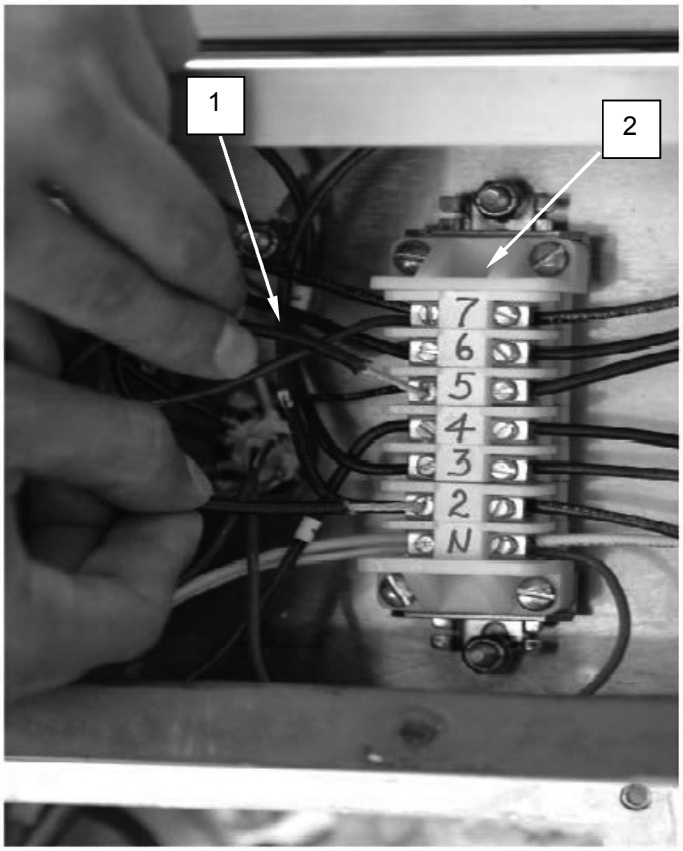


Figure 3. TRH Tank Terminal Strip.

TROUBLESHOOTING PROCEDURE - CONTINUED

STEP 9. Test the thermodisc as follows:

a. Disconnect power to the TRH tank.

b. Disconnect the black thermodisc wire on left side of terminal no. 7 on terminal block (Figure 4, Item 2).

c. Reconnect power to the TRH tank.

d. Ensure TRH red Pull-ON/Push-OFF is in the ON position.

WARNING

Never use the “BOIL” mode to prepare rations as it bypasses built in safety features and may cause personnel to be burned by vented steam or scalding can contents. Never leave the TRH unattended when operating in the “BOIL” mode. Water may boil over causing injury to personnel.

e. Ensure AUTO/BOIL switch is in the BOIL position.

f. If the burner does not operate touch one end of the test wire (Figure 4, Item 1) to terminal no. 2 of the terminal strip (Figure 4, Item 2), and touch the other end of the test wire to terminal no. 7 of the terminal strip (Figure 4, Item 2).

g. If the amber colored LINE light illuminates, indicating proper burner operation, replace the AUTO/BOIL switch (WP 0030).

h. Reconnect the black thermodisc wire on left side of terminal no. 7 on terminal block.

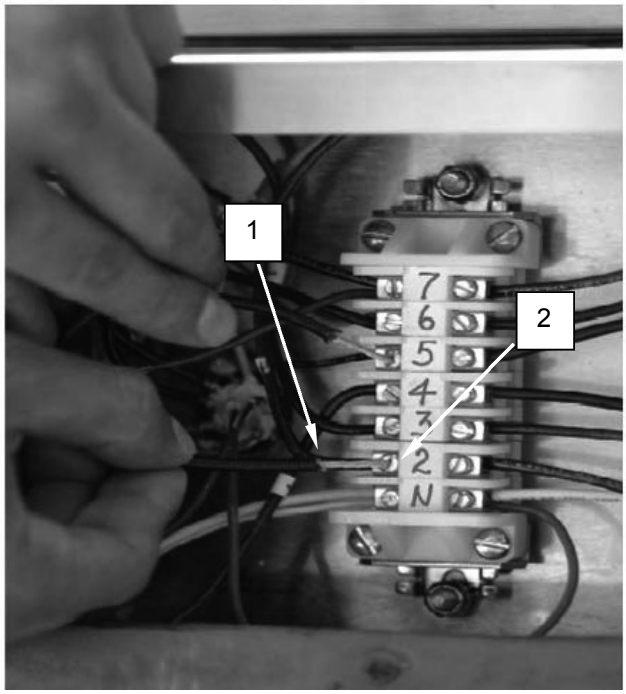


Figure 4. TRH Tank Terminal Strip.

TROUBLESHOOTING PROCEDURE - CONTINUED

i. If troubleshooting up to this point does not correct the fault, check for broken wires, bad grounds, or bad components.

j. Replace desiccant bag and primary control box cover and retain cover with screws.

WARNING

Do not attempt to connect a fuel line to the TRH in the vicinity of any open flame. Ensure that the fuel hose connections are made properly to avoid fuel spillage. Prevent a possible fire hazard by having absorbent materials or fuel mats on hand to absorb any spillage. Failure to observe safety precautions may result in injury or death to personnel.

SYMPTOM

With Pull-ON/Push-OFF knob in the ON position, TRH attempts to start but does not or TRH is running normally and then stops.

MALFUNCTION

Fuel flow problems have stopped the TRH during operation or have prevented the TRH from starting properly.

STEP 1. Ensure air control system is working properly.

a. Perform motor and air compressor test IAW WP 0011.

STEP 2. Ensure fuel control solenoid and fuel pump are working properly.

a. Perform fuel pump and priming test IAW WP 0011.

b. Perform fuel pump gauge test IAW WP 0011.

STEP 3. Ensure air compressor is working properly.

a. Perform air compressor gauge test IAW WP 0011.

TROUBLESHOOTING PROCEDURE - CONTINUED

SYMPTOM

TRH Burner does not install in TRH Tank.

MALFUNCTION

The TRH Tank is damaged so that TRH Burner will not fit in burner housing.

CORRECTIVE ACTION

STEP 1. Check the alignment of the TRH Tank saddle pins (Figure 5, Item 1) located inside the TRH Tank burner housing. Align saddle pins so that TRH Burner can slide into TRH Tank burner housing.

Figure 5. Saddle Pin Locations.

STEP 2. Check TRH Tank burner housing for damage.

a. If TRH Tank burner housing is bent or dented, repair damage using shop equipment so that TRH Burner is able to be installed in TRH Tank.

TROUBLESHOOTING PROCEDURE - CONTINUED

MALFUNCTION

The TRH Burner was improperly assembled or damaged so that it will not fit in the TRH tank or will not assemble properly.

CORRECTIVE ACTION

STEP 1. Check TRH burner for proper assembly or damage

a. Disassemble burner IAW WP 0042 and observe components for damage.

(1) Replace any burner components that are damaged or unable to be properly installed.

b. Reassemble burner IAW WP 0023 and test fire IAW test firing procedures in WP 0011.

WARNING

Do not attempt to connect a fuel line to the TRH in the vicinity of any open flame. Ensure that the fuel hose connections are made properly to avoid fuel spillage. Prevent a possible fire hazard by having absorbent materials or fuel mats on hand to absorb any spillage. Failure to observe safety precautions may result in injury or death to personnel.

SYMPTOM

Fuel has leaked out of the system.

MALFUNCTION

Fuel has leaked out of the system.

CORRECTIVE ACTION

STEP 1. Check fuel sump.

a. Check fuel sump retaining screws (Figure 6, Item 1) for tightness.

(1) Tighten any loose fuel sump retaining screws (Figure 6, Item 1).

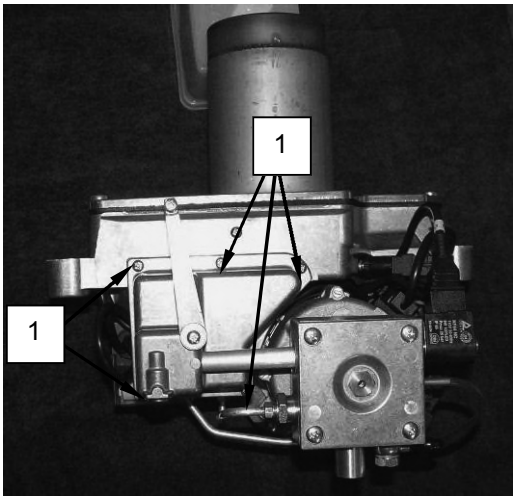


Figure 6. Fuel Sump Retaining Screws.

TROUBLESHOOTING PROCEDURE - CONTINUED

b. Check drain plug (Figure 7, Item 1) for proper installation.

(1) Tighten drain plug (Figure 7, Item 1).

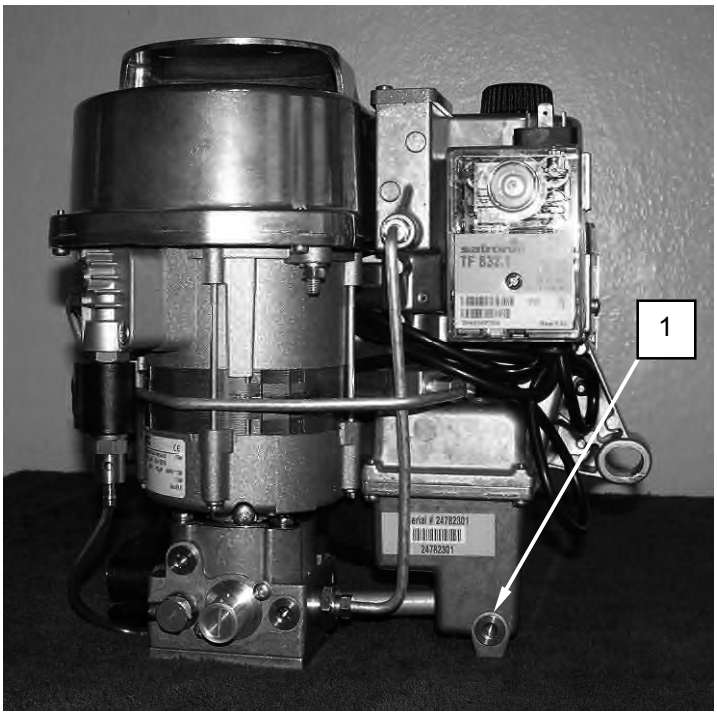


Figure 7. Fuel Sump Drain Plug.

TROUBLESHOOTING PROCEDURE - CONTINUED

c. Check fuel sump gasket (Figure 8, Item 2) for damage or improper installation.

(1) Loosen fuel sump retaining screws (Figure 8, Item 1) and remove fuel sump.

(2) Realign fuel pump gasket (Figure 8, Item 2) so that it rests in the alignment groove. Replace the fuel sump gasket if it is damaged (Figure 8, Item 2).

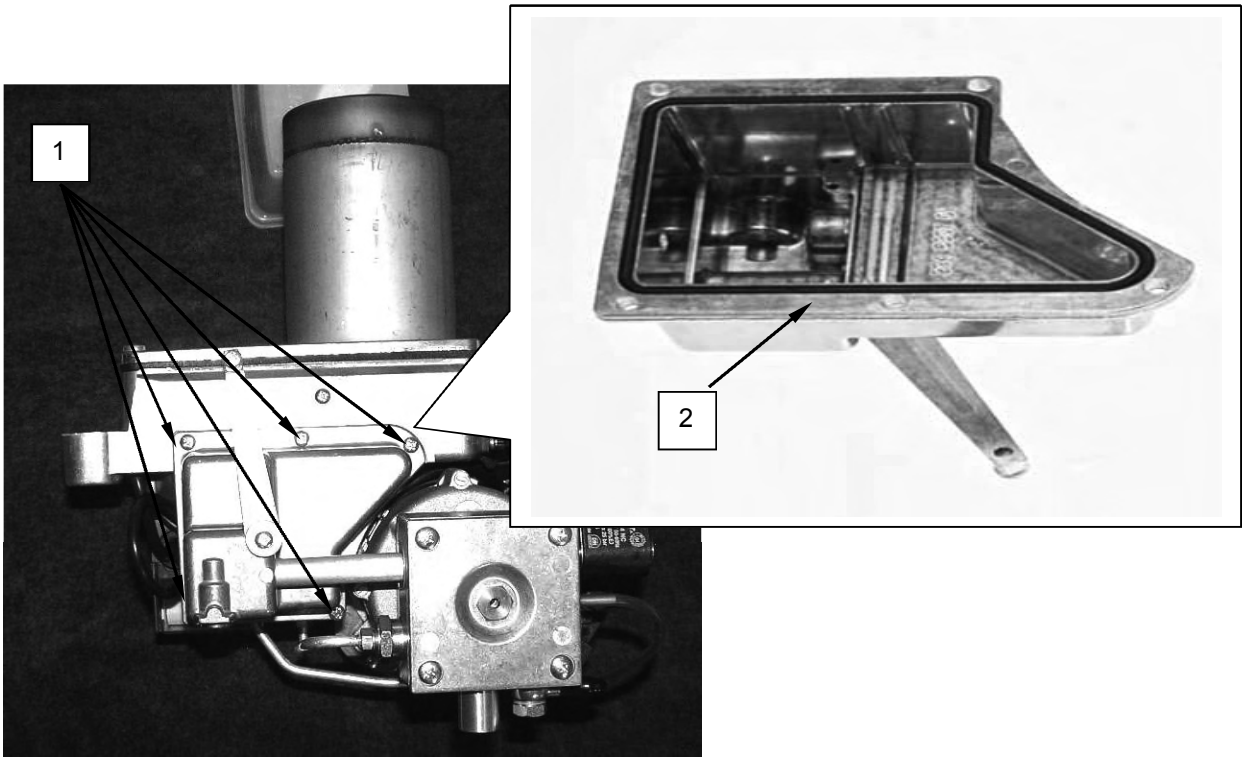


Figure 8. Fuel Sump Gasket.

TROUBLESHOOTING PROCEDURE - CONTINUED

STEP 2. Check flow control module cover .

a. Check flow control module cover gasket (Figure 9, Item 2) for damage or improper installation.

(1) Loosen flow control module cover retaining screws (Figure 9, Item 1) and remove flow control module cover.

(2) Realign flow control module cover gasket (Figure 9, Item 2) so that it rests in the alignment groove. Replace the flow control module cover gasket (Figure 9, Item 2) if it is damaged.

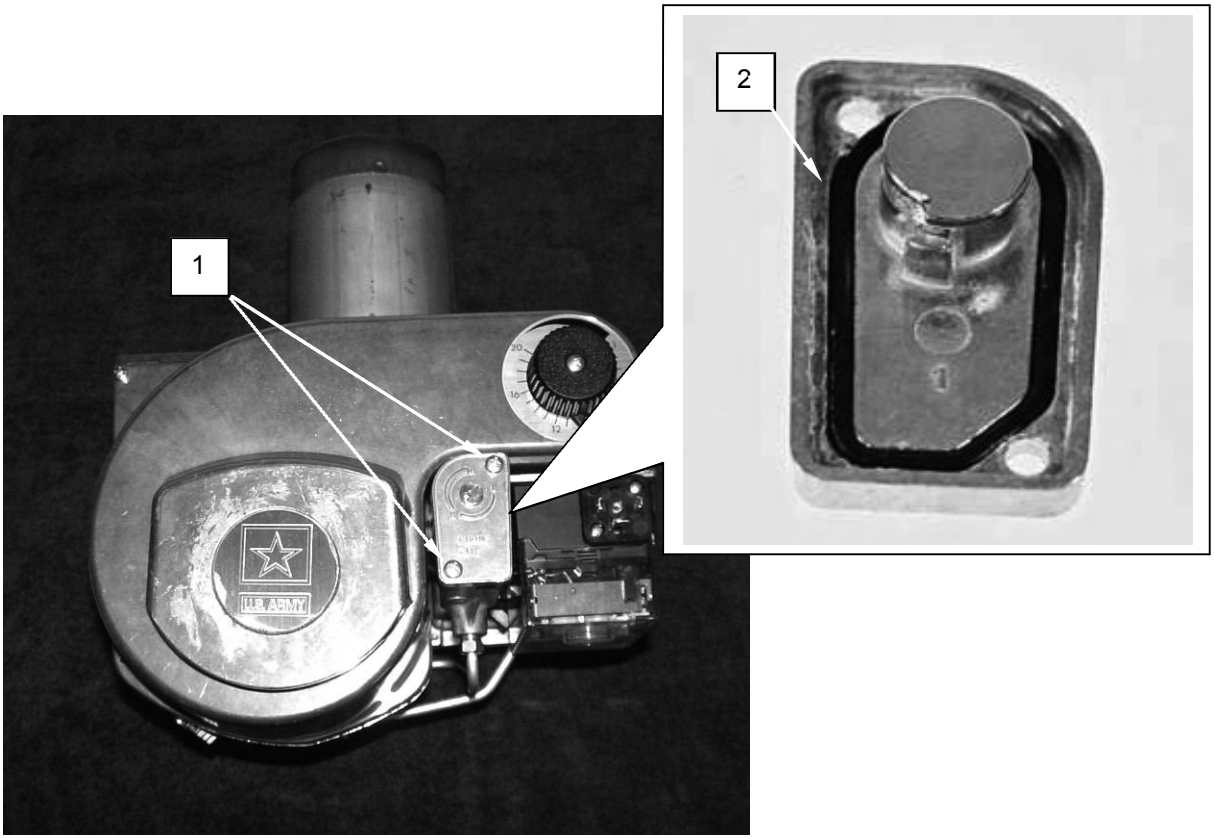


Figure 9. Flow Control Module Cover Gasket.

TROUBLESHOOTING PROCEDURE - CONTINUED

STEP 3. Check crossover tube (Figure 10, Item 2).

a. Loosen fuel sump retaining screws (Figure 10, Item 1) and remove fuel sump.

b. Remove crossover tube by gently pulling away from fuel pump.

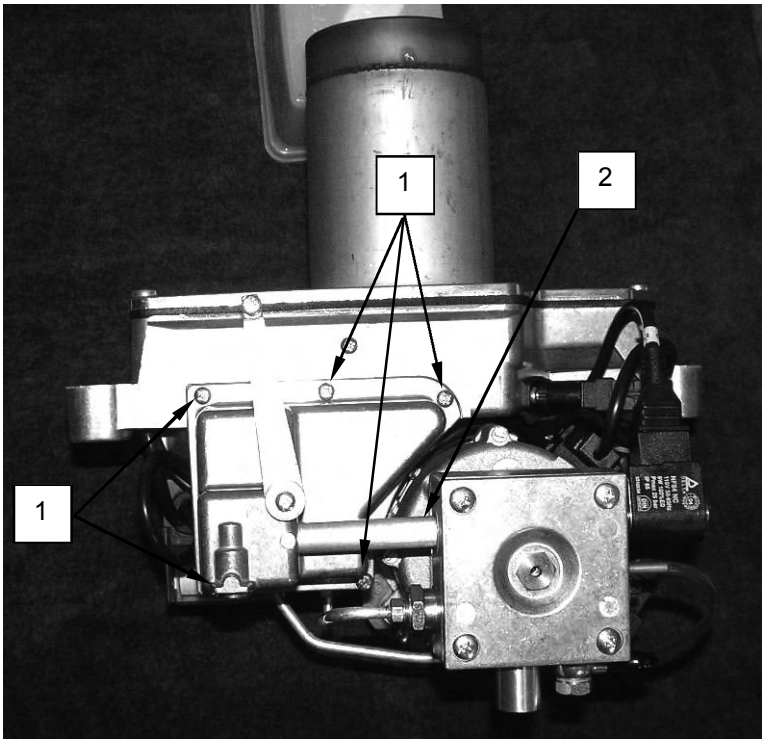


Figure 10. Removing the Crossover Tube.

c. Check crossover tube O-rings (Figure 11, Item 1) for damage or improper installation.

(1) Realign crossover tube O-rings (Figure 11, Item 1) so they fit properly.

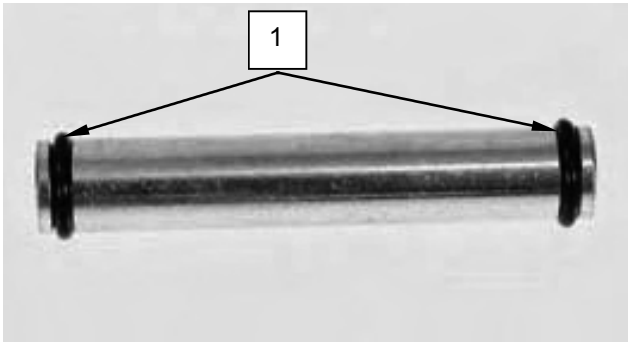


Figure 11. Crossover Tube O-rings.

TROUBLESHOOTING PROCEDURE - CONTINUED

STEP 4. Check atomizing chamber (Figure 12, Item 2).

a. Loosen four screws retaining front flange to burner housing and remove front flange (Figure 12, Item 1).

b. Remove atomizing chamber (Figure 12, Item 2) by pulling firmly away from burner housing

c. Check status of gasket (Figure 12, Item 3) located on back side of atomizing chamber (Figure 12, Item 2).

(1) Replace any damaged or unserviceable atomizing chamber gasket (Figure 12, Item 3).

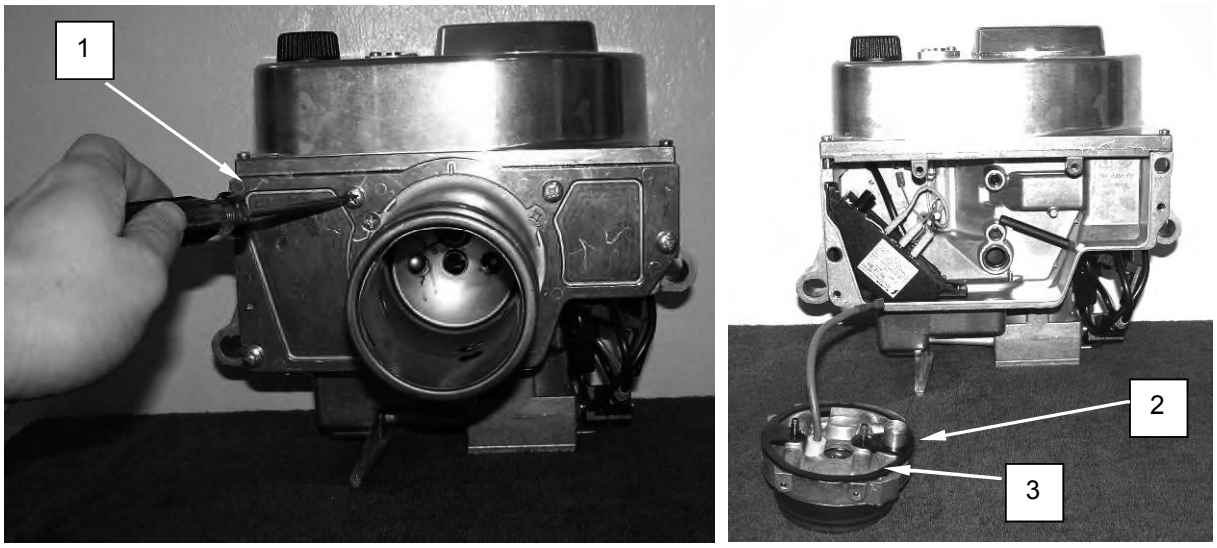


Figure 12. Removing TRH Burner Front Flange.

SYMPTOM

Excess steam when TRH lid is closed.

MALFUNCTION

TRH is set to incorrect mode of operation.

CORRECTIVE ACTION

STEP 1. Ensure TRH Tank lid gasket is not damaged, rotted, or deformed. Repair the TRH Tank Lid by replacing an unserviceable lid gasket (WP 0047).

STEP 2. Replace TRH Tank lid (WP 0022).

TROUBLESHOOTING PROCEDURE - CONTINUED

SYMPTOM

TRH burner emits smoke and/or sparks.

MALFUNCTION

Incorrect TRH burner settings or residual fuel in TRH burner flame tube have caused the TRH Burner to emit smoke and/or sparks.

CORRECTIVE ACTION

STEP 1. Ensure motor is working properly.

a. Perform motor test IAW WP 0011.

STEP 2. Ensure air control solenoid is working properly.

a. Perform air control system test IAW WP 0011.

STEP 3. Ensure fuel control solenoid is working properly.

a. Perform fuel control solenoid test IAW WP 0011.

STEP 4. Ensure fuel pump is working properly.

a. Perform fuel pump and priming test IAW WP 0011.

b. Perform fuel pump gauge test IAW WP 0011.

STEP 5. Ensure air compressor is working properly.

a. Perform air compressor gauge test IAW WP 0011.

TROUBLESHOOTING PROCEDURE - CONTINUED

SYMPTOM

TRH Burner motor makes scraping noise.

MALFUNCTION

Damage, obstructions, or improper installation has caused the TRH Burner motor to scrap against the TRH burner.

CORRECTIVE ACTION

STEP 1. Disassemble TRH Burner IAW WP 0042.

STEP 2. Check motor and blower wheel for freedom of movement by attempting to rotate motor by hand.

a. If movement is restricted, remove and reinstall blower wheel.

(1) Loosen blower wheel retaining screw (Figure 13, Item 1).

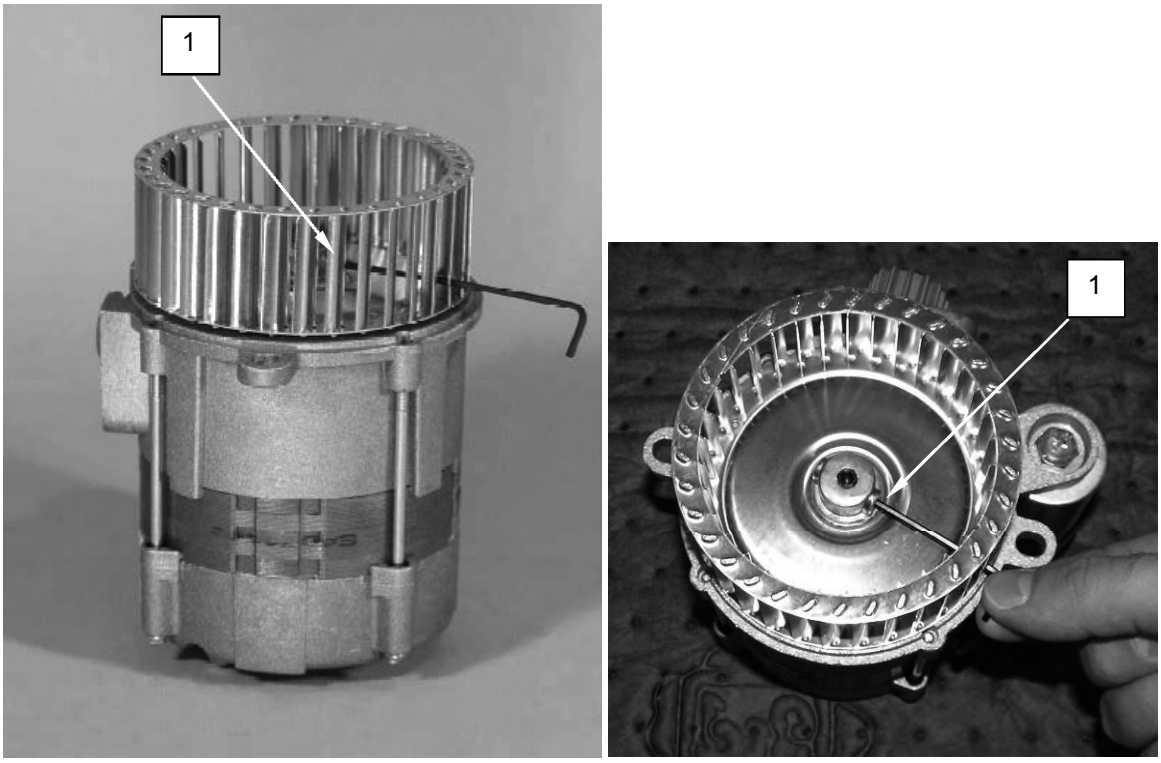


Figure 13. TRH Burner Motor and Blower Wheel.

(2) Align blower wheel to motor and attempt to rotate blower wheel before securing with retaining screw.

i. If blower wheel is able to rotate, retain blower wheel to motor using retaining screw.

ii. If blower wheel is unable to rotate, replace blower wheel and motor IAW WP 0042.

END OF WORK PACKAGE

FIELD MAINTENANCE

MULTI-FUEL BURNER TEST

INITIAL SETUP:

Tools and Special Tools

Maintenance Kit (WP 0069, Item 1)
AK Tool Box (WP 0069, Item 3)

Materials/Parts

Oil and Water Absorbent Material (WP 0069, Item 1)
Chemical and Oil Protective Gloves (WP 0069, Item 9)
Industrial Goggles (WP 0069, Item 10)
Wiping Rag (WP 0069, Item 13)

Personnel Required

Quartermaster Equipment Repairer 91J (1)

Equipment Condition

Burner removed from TRH (WP 0026)

References

WP 0010, 0028, 0042, 0043, 0044, 0045, 0046

TEST

WARNING

During operation, the TRH produces harmful carbon monoxide (CO) and other gases. Carbon monoxide is a colorless, odorless, and tasteless gas. Carbon monoxide poisoning can cause symptoms such as nausea, dizziness or headaches and in severe cases can result in brain damage, heart damage or death. To prevent CO poisoning, ensure that the TRH operating spaces are well ventilated during burner operation. Under no circumstances, should the TRH be operated in any enclosure with all vents closed.

WARNING

The burner assembly flame tube is exposed during bench testing. Flames will shoot out of flame tube opening during operation. Special care is required to keep area around flame tube opening clear of personnel and equipment.

To properly test the burner assembly on a bench, refer to the Setup Procedure paragraph below. After proper setup of the workbench has been completed, follow the steps in the appropriate section of this work package.

TEST - CONTINUED

Setup Procedure

The items in Table 1 below are required for testing the burner on a workbench.

Table 1. Bench Testing Materials.

Item	Source	Item	Source
Folding Table	AK	Absorbent Material	Local Use
Fire Extinguisher	AK or Local Use	TRH Burner	AK
Fuel Can With Adapter	AK or Local Use	Wiping Rags	Local Use
Fuel Line	AK	Fuel Drainage Container	Local Use
Power Test Cord	TRH Spare Parts Kit	Power Strip	Local Use
Test Control Box	TRH Spare Parts Kit	TRH Spare Parts Kit	AK
Metal Dust Pan	Local Use		

Use the following steps to set up the workbench:

1. Set up the folding table and place the burner to be tested on a fuel absorbent mat on the table.
2. Remove the electrical control box from burner (Figure 1, Item 1).

Figure 1. Electrical Control Box Removal.

TEST - CONTINUED

WARNING

When using the diagnostic test box to test the TRH Burner, be careful to observe the condition of the test switches on the test box. All switches shall be in the OFF (O) position. Failure to observe this warning may cause unexpected TRH Burner start-up resulting in injury or death to personnel.

3. Install test control box (Figure 2, Item 1) on burner and secure using the integral screw (Figure 2, Item 2).

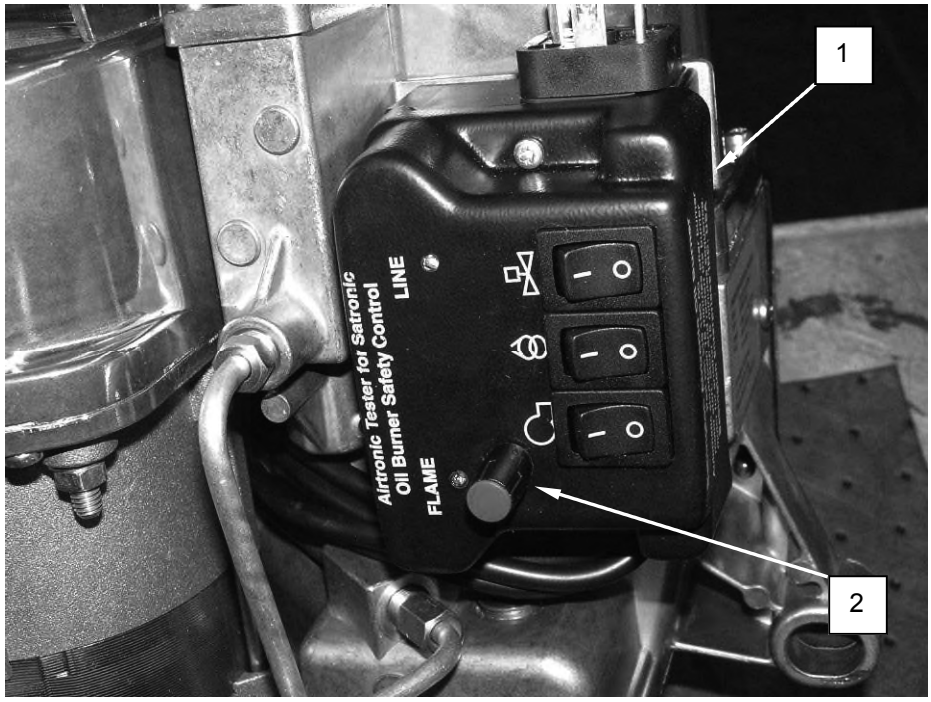


Figure 2. Test Control Box Placement.

WARNING

Gasoline should **NOT** be used with the TRH under any circumstance. **Only JP-8 or an approved alternate diesel fuel may be used.** Using gasoline in the TRH will create a fire danger and potential for explosion. Failure to observe safety precautions may result in injury or death to personnel.

4. Attach fuel can adapter to a 5-gallon fuel can.

5. Remove the hose clamp from the opposite end of the fuel line.

TEST – CONTINUED

6. Attach fuel line from can adapter (Figure 3, Item 1) to burner fuel input (Figure 3, Item 2).

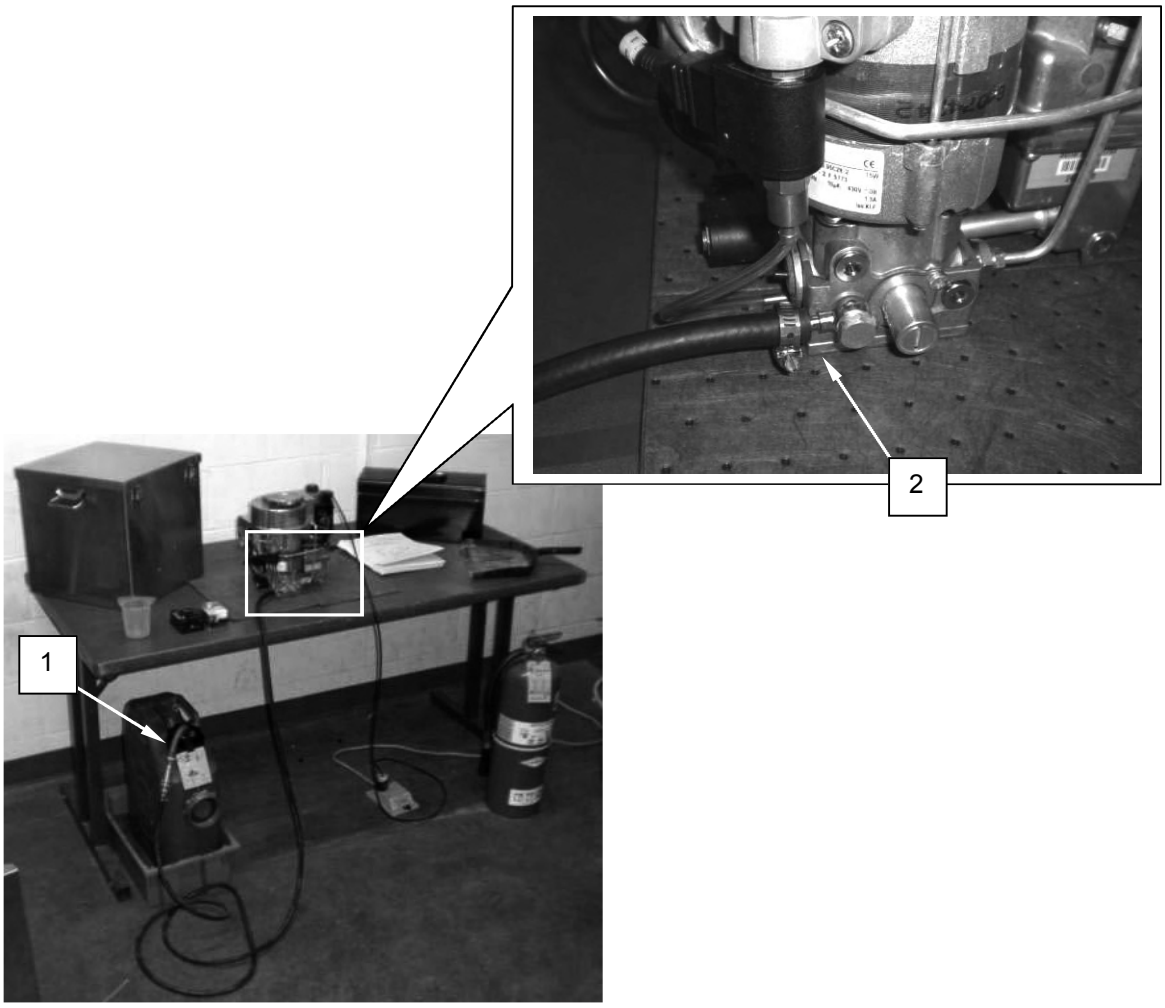


Figure 3. Typical Bench Testing Setup.

WARNING

When using the diagnostic test box to test the TRH Burner, be careful to observe the condition of the test switches on the test box. All switches shall be in the OFF (O) position. Failure to observe this warning may cause unexpected TRH Burner start-up resulting in injury or death to personnel.

7. Connect power test cord to burner control box input and power strip 110 VAC outlet.

8. Connect power strip to 110 VAC outlet.

9. Bench test Burner Assembly in accordance with bench testing procedure.

END OF TASK

TEST – CONTINUED

Power Flow Test

TRH Burner power flow may be interrupted by improper power connections or damaged components. Verify proper power flow to TRH Burner by performing the following checks:

1. Observe the status of the amber colored LINE light (Figure 4, Item 1) on the diagnostic test box (Figure 4, Item 2).

2. If amber LINE light (Figure 4, Item 1) is lit, the TRH Burner is receiving power properly and no further action is required.

3. If amber colored LINE light (Figure 4, Item 1) is not lit perform the following checks:

   a. Check the power source.

      (1) Ensure power strip is turned ON and the power strip circuit breaker reset is not tripped. Refer to power strip operating instructions for assistance.

      (2) Ensure power source is working properly by testing with a meter or a known good 110 VAC device.

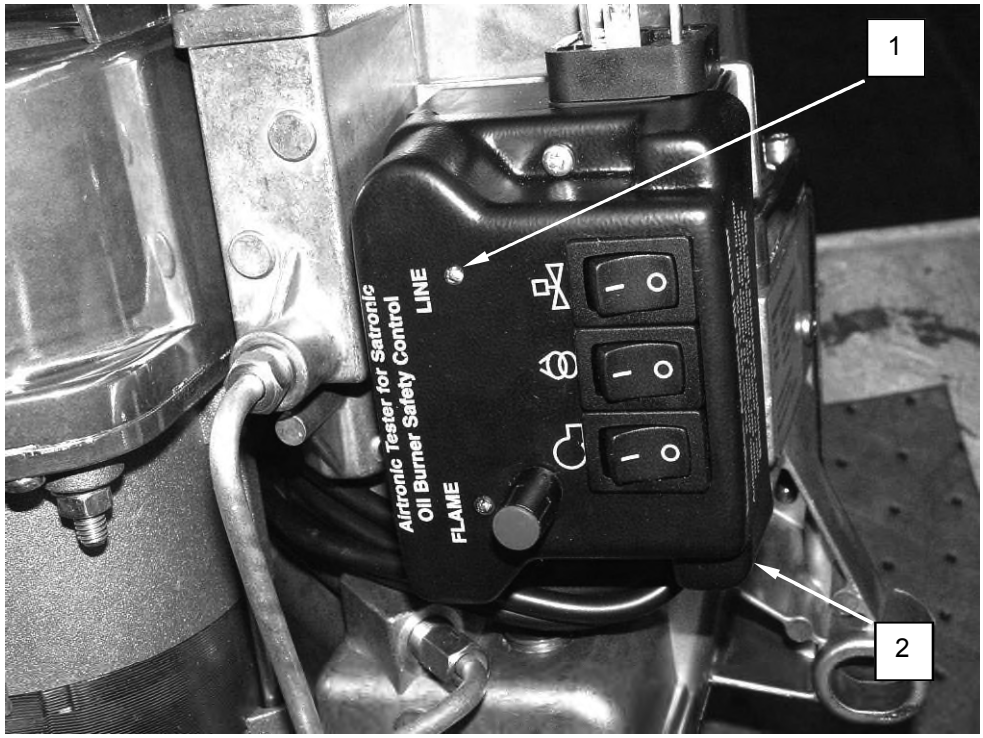


Figure 4. Diagnostic Test Box Status.

   b. If power source is working properly, the diagnostic test box may be malfunctioning. If available, try using a new test box.

   c. If none of the checks listed above illuminates the amber colored LINE light, check the TRH Burner wiring.

END OF TASK

TEST – CONTINUED

Photocell Test

NOTE

A flashlight may be used to perform this test.

The photocell test will ensure proper operation and orientation of the photocell. To test the photocell, refer to the following procedures:

1. Face the front of the burner towards a direct light source; ensuring the flame tube opening (Figure 5, Item 1) is clear and well lit.

2. Place an opaque, non-flammable object over flame tube opening (Figure 5, Item 1) to block light.

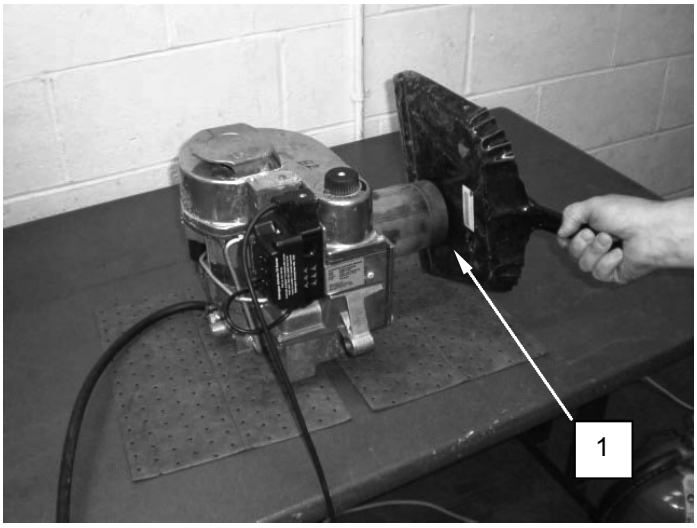


Figure 5. Photocell Test.

3. The amber colored LED on the control test box labeled FLAME (Figure 6, Item 1) should not be lit with flame tube covered.

4. Remove opaque, non-flammable object. FLAME LED (Figure 6, Item 1) should be lit.

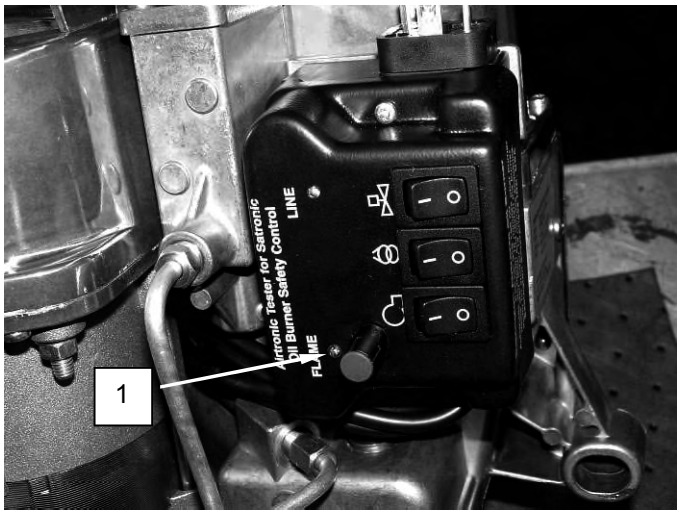


Figure 6. Test Control Box.

TEST – CONTINUED

5. If Photocell test fails, check the following:

   a. Check photocell installation. Photocell must be fully inserted in photocell base (Figure 7, Item 1) with photocell collar properly aligned and photocell light detector facing combustion chamber.

      (1) Disconnect power cable from photocell and reinstall power cable to photocell, ensuring proper seating.

      (2) Ensure light detector (Figure 7, Item 2) on photocell is pointing away from the photocell power cable (Figure 7, Item 4).

      (3) Ensure photocell standoff (Figure 7, Item 3) is placed on photocell. Align tab on photocell standoff with notch on photocell.

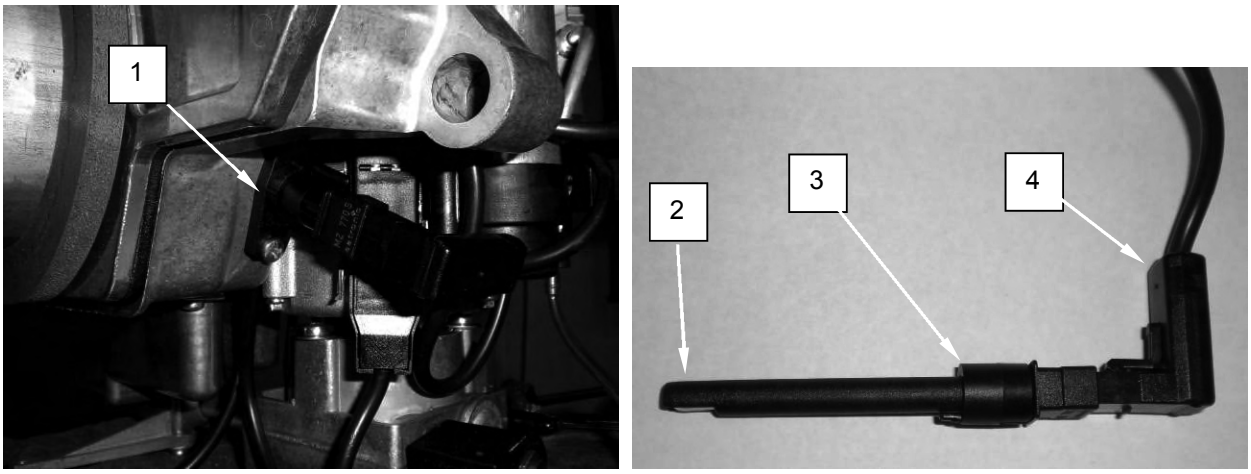


Figure 7. Photocell to Power Cable Connection.

TEST – CONTINUED

(4) Ensure photocell (Figure 8, Item 1) is inserted into TRH burner by sliding into photocell base (Figure 8, Item 2), aligning tab on photocell standoff with notch on photocell base, and orienting so that the top of the photocell is facing the TRH burner flame tube (Figure 8, Item 3) as shown in Figure 8.

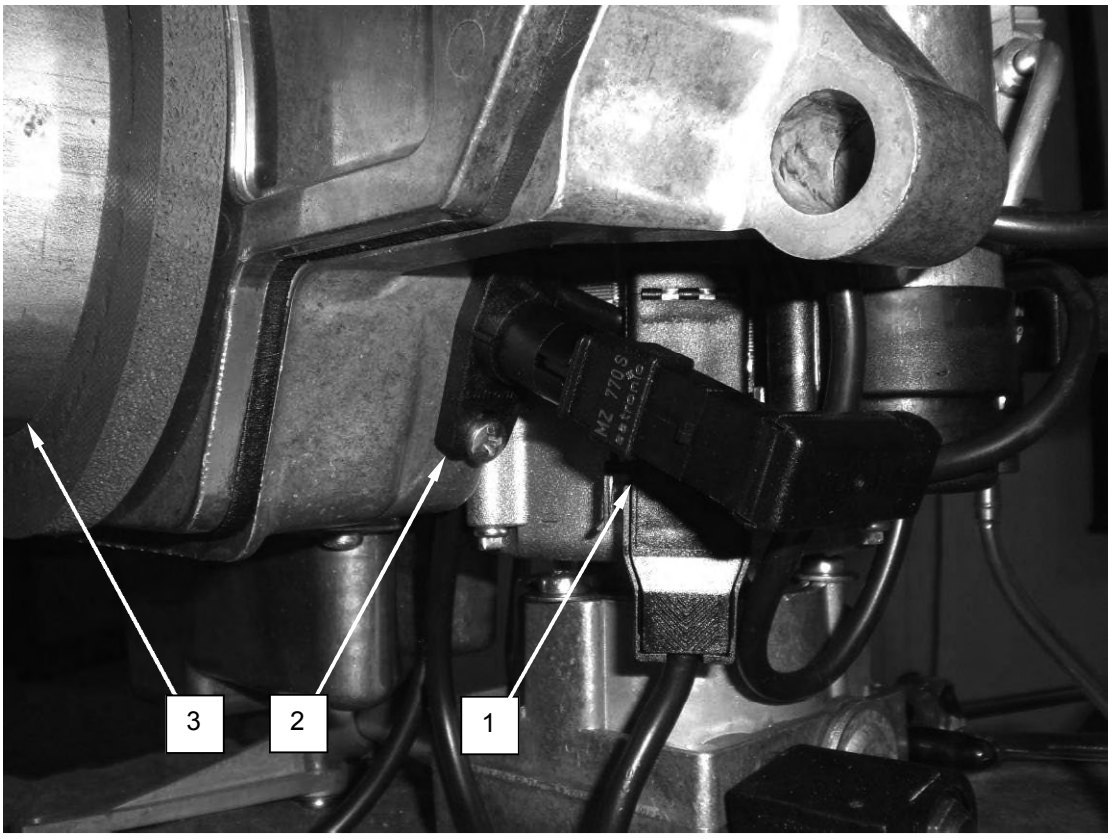


Figure 8. Photocell Orientation.

b. If the following checks do not correct the problem, replace photocell IAW WP 0028.

6. Test fire burner IAW test firing paragraph in this WP.

END OF TASK

TEST – CONTINUED

Motor and Air Compressor Test

The motor test will ensure proper operation of the blower motor. To test the blower motor, refer to the following procedures:

1. Press motor test switch on test control box (Figure 9, Item 2). The blower should start running.

    a. If blower makes strange noises, such as scraping or bumping, turn motor off and refer to WP 0042 for blower motor replacement procedures.

    b. If blower does not start, turn off motor and refer to WP 0042 for blower motor replacement procedures.

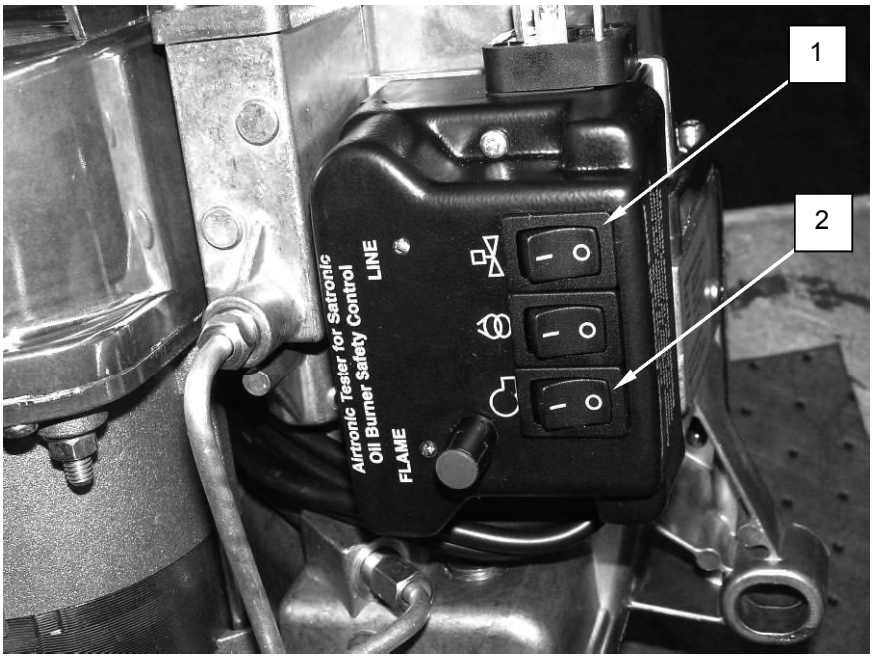


Figure 9. Test Control Box.

TEST – CONTINUED

2. With blower still running, place a finger over the priming port (Figure 10, Item 1). Air should be felt escaping from the priming port.

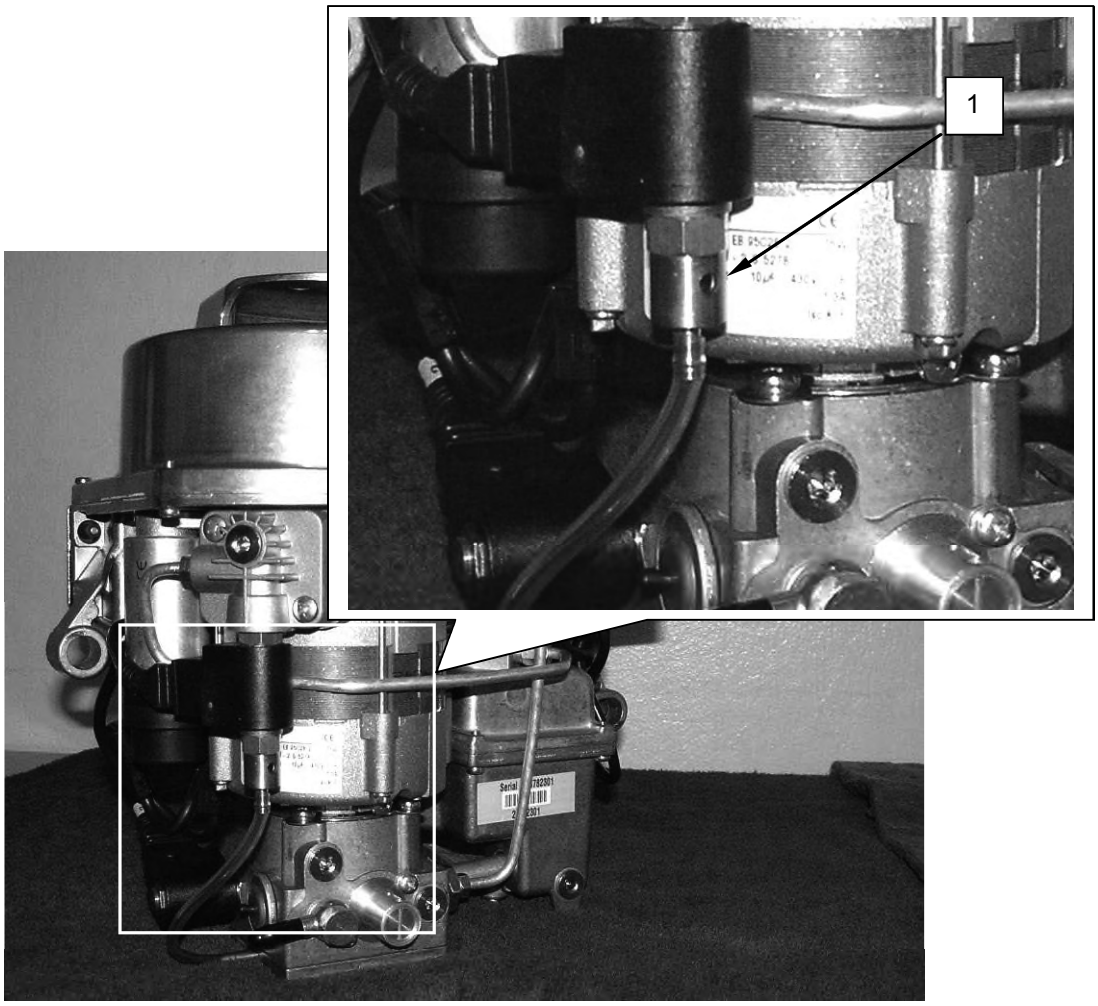


Figure 10. TRH Burner Priming Port.

   a. If no air is felt at the priming port, turn blower off and replace the following components one at a time, in order, until air is felt escaping from the TRH Burner priming port.

      (1) Compressor filter (WP 0043).

      (2) Air Solenoid Valve (WP 0042).

      (3) Compressor Piston Ring and O-Ring (WP 0042).

      (4) Metal Air Line (WP 0042).

      (5) Compressor Head Assembly (WP 0042).

3. With blower still running, continue to feel for air at the priming port and turn on the air solenoid test switch (Figure 9, Item 1). No air should be felt at the priming port.

   a. If air is still felt at the priming port turn off motor test switch and air solenoid test switch and replace air solenoid IAW WP 0042.

TEST – CONTINUED

4. Turn off motor test switch and air solenoid test switch.

5. If corrective action was taken, test fire burner IAW test firing paragraph in this WP.

END OF TASK

Ignition Transformer Test

To test the ignition transformer refer to the following steps:

1. Turn on the motor test switch (Figure 11, Item 2).

2. Turn on the ignition transformer test switch on the test control box (Figure 11, Item 1).

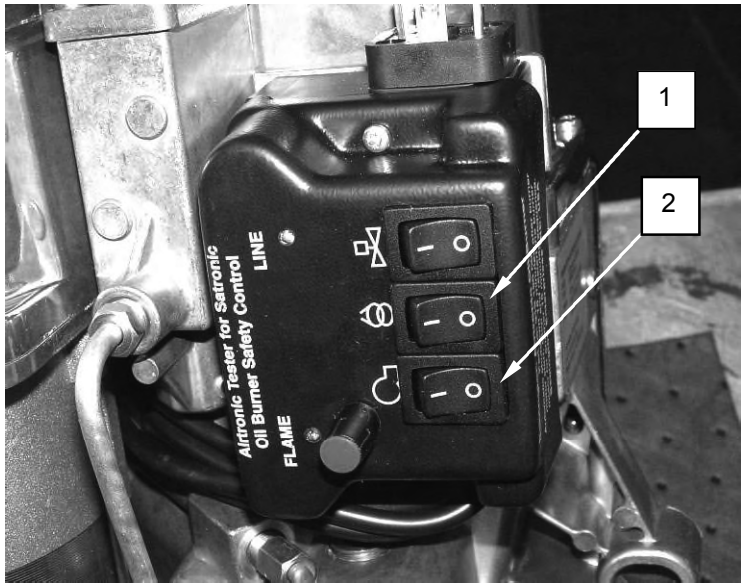


Figure 11. Test Control Box.

3. A clicking or sizzling sound should be heard.

WARNING

During the Ignition Transformer test, it is necessary to look into the TRH Burner flame tube to observe a spark. When observing the flame tube for existence of a spark be sure to stay as far away as possible from the flame tube. Failure to observe this warning may result in injury or death to personnel.

4. Look into the flame tube at the combustion chamber for a blue spark.

   a. If spark is observed, turn off the ignition transformer and motor test switches.

   b. If no sound was heard and no spark was observed, refer to WP 0045 for igniter replacement.

5. If corrective action was taken, test fire burner IAW test firing paragraph in this WP.

END OF TASK

TEST – CONTINUED

Fuel Pump and Priming Test

1. Remove the fuel tower cover (Figure 12, Item 1).

    a. Ensure the fuel tower cover O-ring is properly seated in the groove with no tears, cracks, or deterioration.

    b. Replace O-ring if necessary.

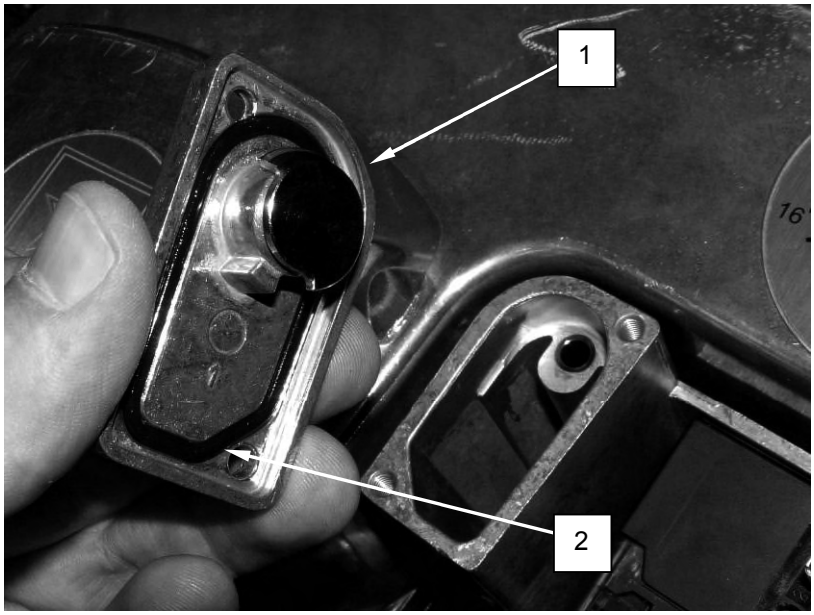


Figure 12. Fuel Tower Cover.

2. To prime the fuel pump, place a thumb over the priming port (Figure 13, Item 1) and depress the stud on the side of the fuel pump (Figure 13, Item 2). Maintain this position while performing next step.

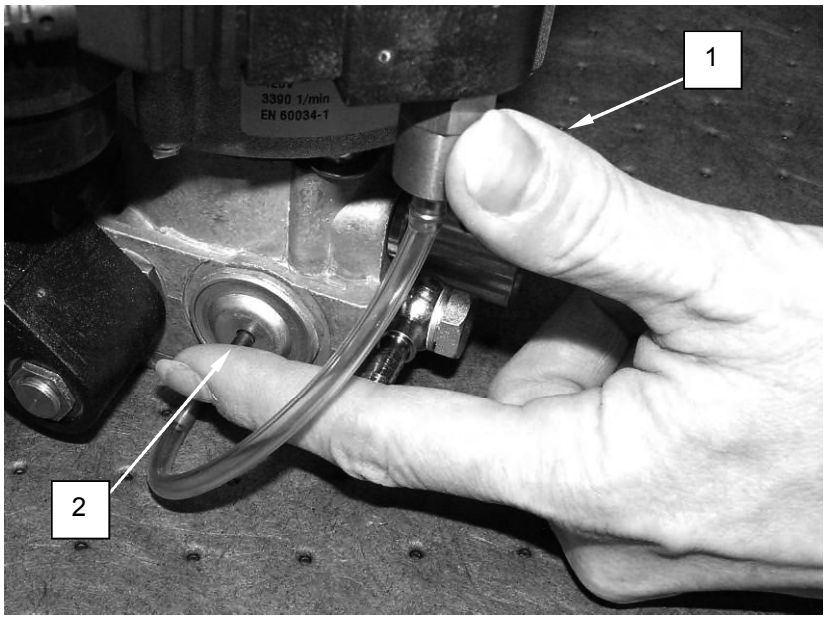


Figure 13. Fuel Pump Priming.

TEST – CONTINUED

WARNING

Fuel in the fuel tower may splatter during priming and purging process. Take care when observing fuel tower to prevent fuel from getting in eyes or mouth. Wear eye protection when performing pump and priming test.

3. While observing the fuel tower (Figure 14, Item 1) turn on the motor test switch (Figure 14, Item 2) and watch for fuel.

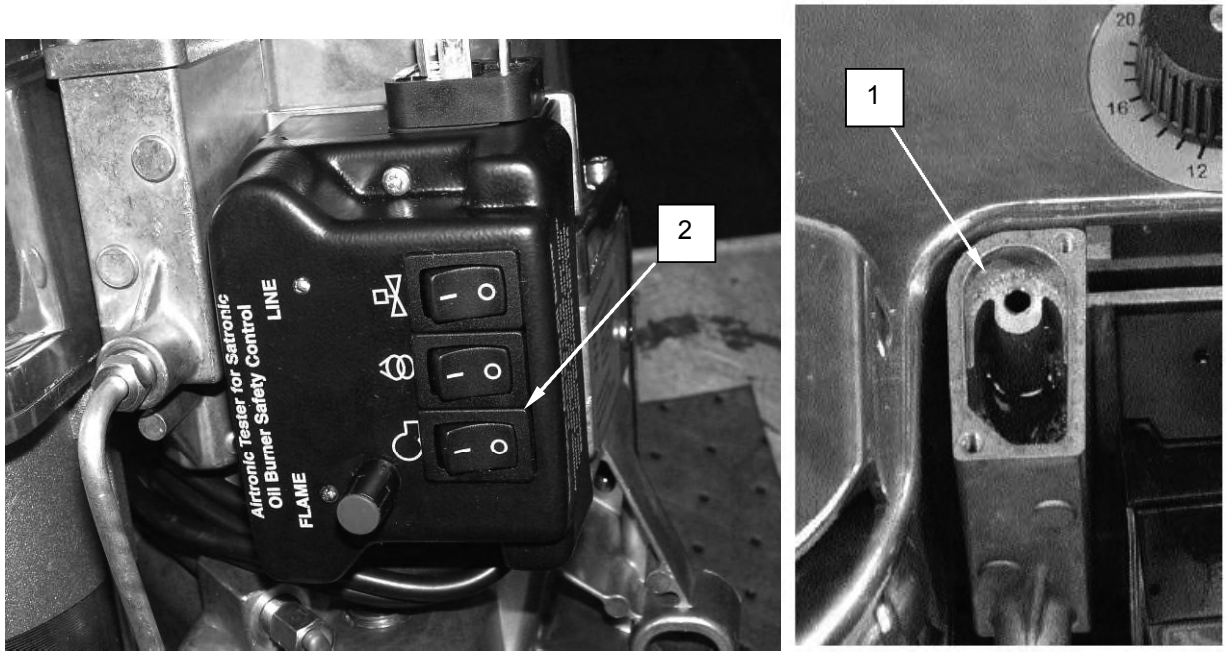


Figure 14. Fuel Tower.

a. The fuel tower will begin to fill with fuel. The fuel may bubble, then foam. This is proper fuel pump operation. If pump functions properly, turn of switches.

b. If no fuel is observed in the fuel tower (improper fuel flow to the burner) turn off switches and check the fuel delivery system as follows:

(1) Ensure TRH Burner metal fuel line is properly connected and not damaged IAW WP 0042.

(2) Ensure fuel pump connector tube is properly installed and not damaged IAW WP 0046.

(3) Ensure fuel control solenoid is properly installed and not damaged IAW WP 0042.

(4) Ensure fuel pump is properly installed and not damaged IAW WP 0044.

4. Ensuring the fuel tower cover O-ring is properly seated, replace the fuel tower cover and the fuel tower cover retaining screws.

TEST - CONTINUED

5. Ensure the fuel control knob (Figure 15, Item 1) is set to “M” for proper burner operation.

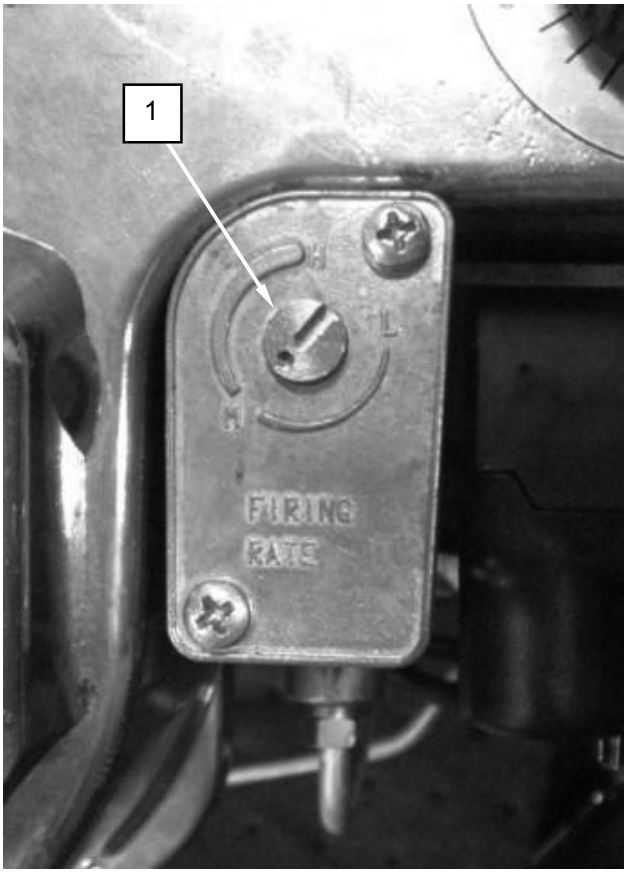


Figure 15. Fuel Control Setting.

6. If corrective action was taken, test fire burner IAW test firing paragraph in this WP.

END OF TASK

TEST - CONTINUED

Air Compressor Gauge Testing

1. Remove plug fitting (Figure 16, Item 2) from compressor head. Remove and inspect air filter, replace if necessary.

2. Install the compressor pressure gauge (Figure 16, Item 2) in the head of the compressor and screw in compressor pressure gauge with a wrench, about two turns.

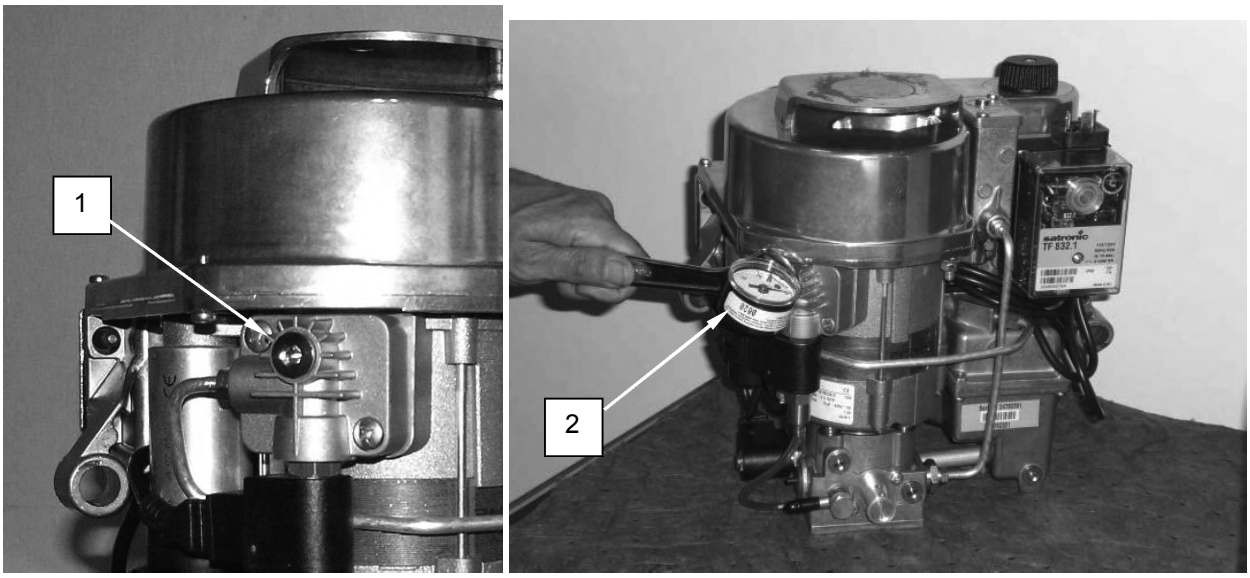


Figure 16. Pressure Gauge Placement.

3. Turn on the motor switch on the test box (Figure 17, Item 2). With the motor running, turn on the air control solenoid switch (Figure 17, Item 1).

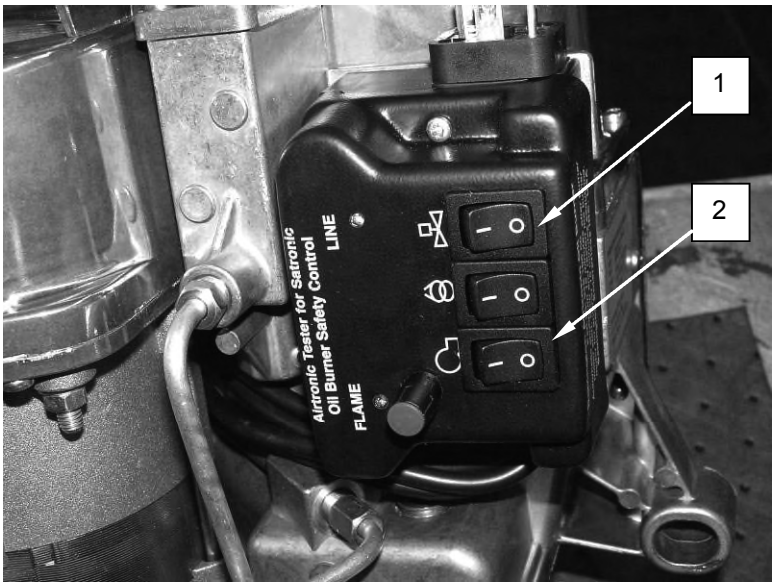


Figure 17. Test Control Box.

TEST - CONTINUED

NOTE

Minor fluctuation of the compressor pressure gauge needle is normal.

a. A pressure reading of 20-32 PSI is within normal operating range.

b. A pressure reading higher than 32.0 may indicate a clogged orifice in the atomizing chamber. Turn off motor and air control solenoid switches and refer to WP 0045 for procedures for replacing the atomizing chamber.

c. A pressure reading below 20.0 may indicate poor compressor performance. Turn off motor and air control solenoid switches and replace piston ring and compressor O-Ring IAW WP 0042.

(1) If replacement of piston ring and compressor O-Ring does not fix the problem, replace the air control solenoid IAW WP 0042.

(2) If replacement of air control solenoid does not fix the problem, replace the compressor assembly IAW WP 0042.

4. Turn off motor test switch, remove compressor pressure gauge, and replace plug fitting.

5. If corrective action was taken, test fire burner IAW test firing paragraph in this WP.

END OF TASK

Fuel Pump Gauge Testing

1. Remove the metal screws in the fuel pump pressure gauge ports.

2. Both gauges are mounted on 1/2-inch coupling extensions (Figure 18, Item 1). Gently screw in the fuel pump vacuum gauge (Figure 18, Item 3) (negatively graduated) and pressure gauge (Figure 18, Item 2) (positively graduated) to the proper ports.

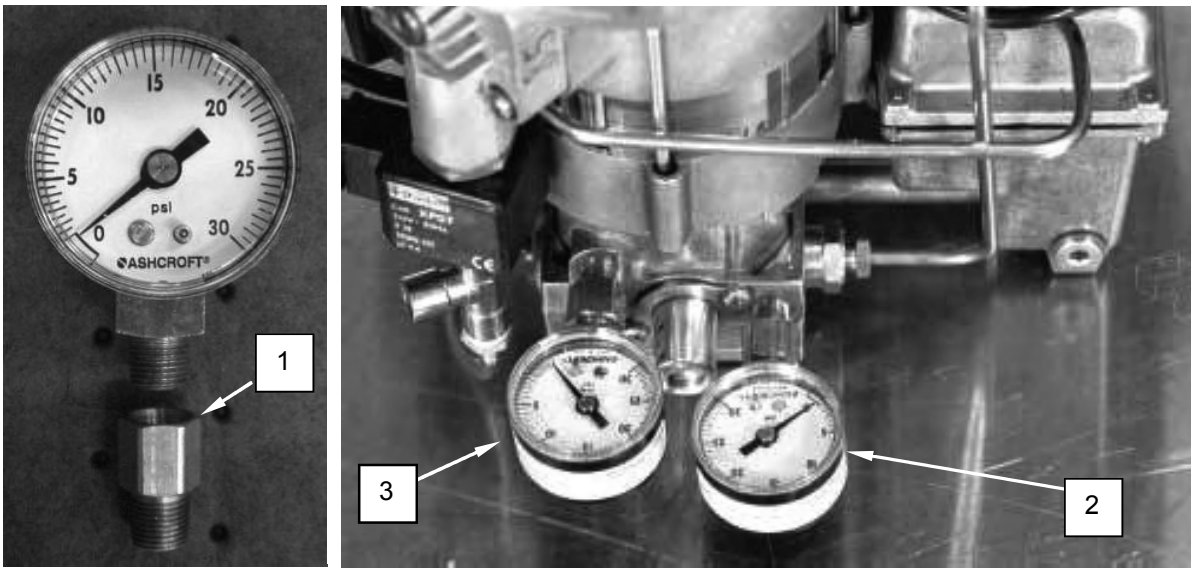


Figure 18. Vacuum and Pressure Gauge Placement.

TEST - CONTINUED

3. Turn on the motor control switch (Figure 19, Item 2) and the air control solenoid switch (Figure 19, Item 1).

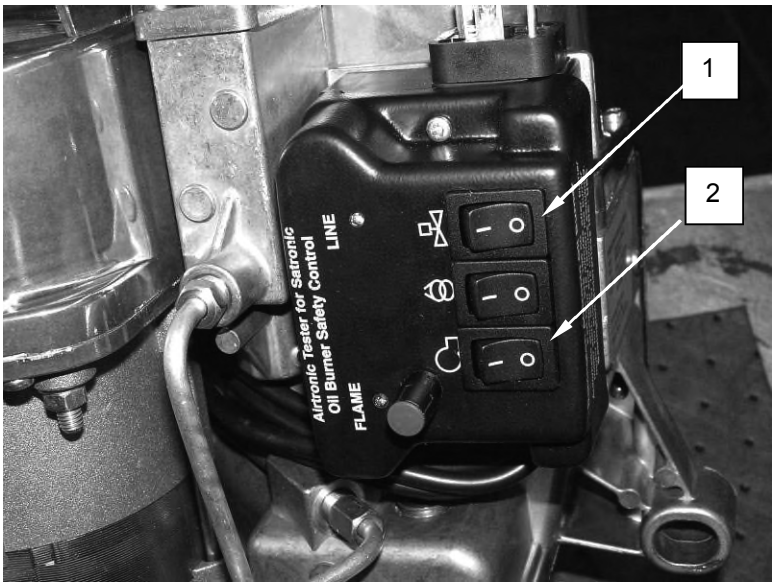


Figure 19. Test Control Box.

4. The fuel pump pressure gauge should read between 7.0 and 9.5 PSI. The fuel pump vacuum gauge should read between 4.5 inHg and 10.0 inHg.

   a. If pressure is within normal range, turn off motor control and air control solenoid switches.

   b. Fuel pump vacuum readings below 4.5 inHg may indicate a kinked fuel line, non-vented fuel can, and/or clogged fuel filter. Turn off motor control and air control solenoid switches and refer to WP 0010 to troubleshoot the fuel delivery system.

   c. If the vacuum gauge reading is out of tolerance (not between 4.5 inHg and 10.0 inHg) and the problem persists after the fuel delivery system has been checked, turn off motor control and air control solenoid switches and refer to WP 0044 for fuel pump replacement procedures.

5. Remove both gauges and extensions.

6. Reinstall metal screws and O-rings into fuel pump ports.

7. If corrective actions were taken, test fire burner IAW test firing paragraph in this WP.

END OF TASK

TEST – CONTINUED

Test Firing

Once troubleshooting has been completed, the following steps should be completed to verify proper burner operation.

WARNING

Ensure power to the TRH is disabled before installing the TRH Burner control box. If power is not disabled, the TRH Burner will attempt to fire. Failure to observe safety precautions may result in injury or death to personnel.

1. Turn power strip off to disable power to the TRH Burner.
2. Remove the diagnostic test box with the integral retaining screw.
3. Replace the diagnostic test box with the TRH Burner control box and tighten the retaining screw.
4. Press the reset button on the TRH Burner control box (Figure 20, Item 1).

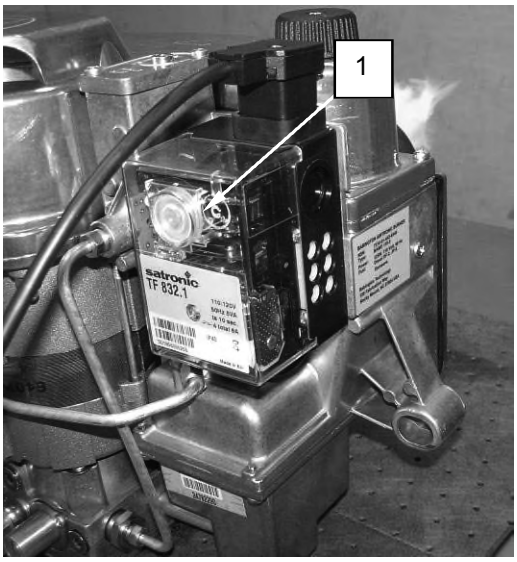


Figure 20. Control Box Reset.

WARNING

DO NOT use any part of the body to cover the flame tube opening. Failure to observe safety precautions may result in injury or death to personnel.

5. Place the non-flammable object over the flame tube opening to block the light.
6. Turn power strip on to apply power to the TRH Burner.

TEST – CONTINUED

7. The motor should start running and the igniter should begin clicking. Within approximately 15 seconds the burner should fire. Once the burner is lit, remove the non-flammable object.

    a. If TRH Burner does not fire, refer to WP 0010 for troubleshooting procedures.

8. Allow the burner to run for 15 minutes ensuring the burner has a chance to burn the fuel in the fuel sump and refill it with new fuel.

    a. Once the 15 minutes has expired without problems or leaks, the TRH burner can be reinstalled in the TRH and operated normally.

    b. If TRH Burner does not run for the full 15 minutes, refer to WP 0010 for troubleshooting procedures.

9. Remove power cord from TRH Burner control box.

10. Remove fuel line from fuel port.

TEST – CONTINUED

WARNING

Use caution when draining fuel from the TRH Burner. Prevent a possible fire hazard by having absorbent materials or fuel mats on hand to absorb any spillage. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

Use caution when draining fuel from the TRH Burner. Fuel draining from the TRH Burner fuel sump may flow rapidly. This could cause fuel spatter or spills on skin or clothing. Keep eyes protected and wash any clothing, equipment, or skin that is contaminated by fuel.

NOTE

Be sure to retrieve and replace sump plug after draining fuel from TRH Burner fuel sump. During removal, fuel sump plug may fall into drainage container. If this occurs do not forget to retrieve and replace sump plug.

11. Drain fuel from TRH burner by removing fuel sump drainage plug (Figure 21, Item 1) and draining fuel into an acceptable container (Figure 21, Item 2).

12. Reinstall fuel sump drainage plug.

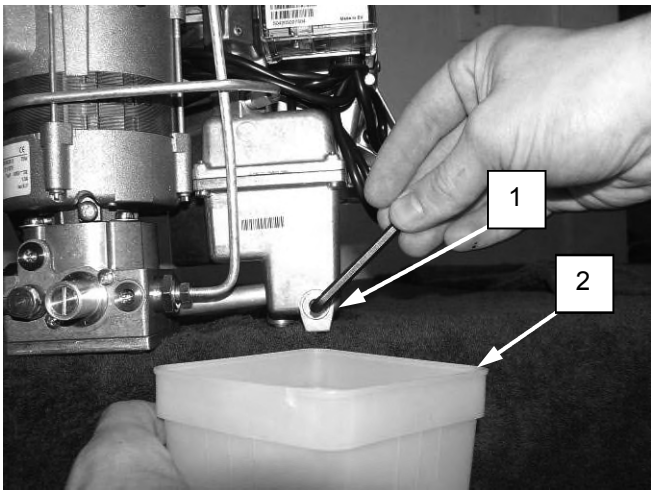


Figure 21. Draining Fuel Sump.

END OF TASK

END OF WORK PACKAGE

CHAPTER 4

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) PROCEDURES FOR ASSAULT KITCHEN

OPERATOR AND FIELD MAINTENANCE

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION

GENERAL

The following information describes PMCS procedures for the Assault Kitchen (AK). The PMCS table has been provided to ensure the Assault Kitchen (AK) is in proper operating condition, and ready for use.

SCOPE

The following work package (WP 0013) contains maintenance procedures that are authorized by the Maintenance Allocation Chart (MAC), and the Source, Maintenance, and Recoverability (SMR) coded items that are identified in the Repair Parts and Special Tools List (RPSTL).

MAINTENANCE FUNCTIONS/PROCEDURES

The work packages above identify maintenance functions specified in the MAC. All maintenance procedures required to complete a maintenance function are identified under PROCEDURE: in the order in which the work is most logically accomplished.

INTRODUCTION

Preventive Maintenance Checks and Services (PMCS) are performed to keep the Assault Kitchen (AK) in good operating condition and ready for its primary mission. The checks are used to find, correct, and report problems. PMCS is performed every day the Assault Kitchen (AK) is in operation, and is done according to the PMCS table provided. Pay attention to **WARNING**, **CAUTION**, and **NOTE** statements. A **WARNING** indicates that someone could be hurt or killed. A **CAUTION** indicates that equipment could be damaged. A **NOTE** may make your maintenance or repair task easier.

Be sure to perform scheduled PMCS. Always perform PMCS in the same order so it becomes habit. With practice, you will quickly recognize problems with the equipment.

Use DA Form 2404 or DA Form 5998, Equipment Inspection and Maintenance Worksheet, to record any discovered faults. Do not record faults that you fix.

PMCS PROCEDURES

WP 0013, Table 1 lists inspections and care required to keep your equipment in good operating condition. It is arranged so that you can perform before operation checks as you walk around the equipment.

Explanation of Table 1 Columns

Item Number. Indicates the reference number. When completing DA Form 2404 or DA Form 5998, Equipment Inspection and Maintenance Worksheet, include the item number for the item to check/service indicating a fault. Item numbers appear in the order you must perform the checks/services listed.

Interval. Indicates when you must perform the procedure in the procedure column.

before - perform before equipment operation
during - perform during equipment operation
after - perform after equipment has been operated
weekly - perform every week
monthly - perform each month
hours - perform at the noted hourly interval

PMCS PROCEDURES - CONTINUED

Item to Check/Service. Indicates the item to be checked or serviced.

Procedure. Indicates the procedure you must perform on the item listed in Item to Check/Service column. You must perform the procedure at the time specified in the Interval column.

Not Fully Mission Capable If:. Indicates faults that will prevent your equipment from performing its primary mission. If you perform procedures listed in Procedure column that show faults listed in this column, do not operate the equipment. Follow standard procedures for maintaining the equipment or reporting equipment failure.

Other Special Entries. Observe all special information and notes that appear in Table 1.

When a check/service procedure is required for both weekly and before intervals, it is not necessary to perform the procedure twice if the equipment is operated during the weekly period.

END OF WORK PACKAGE

OPERATOR AND FIELD MAINTENANCE

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) PROCEDURES

INITIAL SETUP:

References

DA PAM 750-8
TB 43-0002-43

Personnel Required

Food Service Specialist 92G (1)

Materials/Parts

Penetrating Oil (WP 0069, Item 11)

Table 1. Preventive Maintenance Checks and Services for Assault Kitchen.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1	Before/ Daily	TRH Burner Assembly	1. Remove cover and visually inspect TRH Burner for damage. 2. Inspect TRH Burner housing for evidence of fuel leaks. 3. Check TRH Burner electrical control box (Figure 1, Item 2) for damage and secure installation. 4. Visually inspect TRH Burner for loose wire connections (Figure 1, Item 1). 5. Check photocell to ensure it is fully inserted into the photocell base (Figure 1, Item 3). 6. Check air filter for damage (Figure 1, Item 4). 7. Check electrical system connection from TRH Burner to TRH Tank to ensure proper connections.	Damage is present which might prevent proper burner operation. Fuel leaks in TRH Burner housing. Components are loose or not properly installed. Burner electrical connections are loose or improperly installed. Photocell is incorrectly installed. Replace damaged air filter IAW WP 0042.

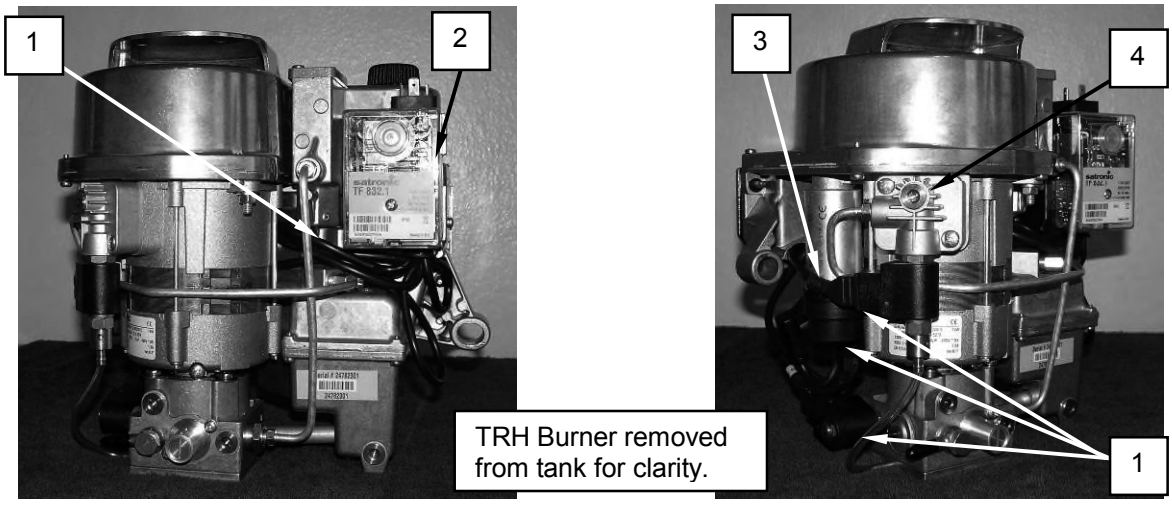


Figure 1. PMCS of TRH Burner Assembly.

Table 1. Preventive Maintenance Checks and Services for Assault Kitchen. - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
2	Before/ Daily	Tray Ration Heater (TRH) Tank	1. Check tank for water leaks. 2. Inspect exterior of TRH for cleanliness. 3. Inspect TRH tank lid and latches (Figure 2, Item 1) for serviceability. 4. Inspect TRH tank lid gasket (Figure 2, Item 3) for dirt, tears, rips or mold/mildew. 5. Ensure the pressure relief port (Figure 2, Item 2), located on inside of TRH lid and between the hinges on the outside of TRH lid, is clean and free of obstructions. 6. Inspect TRH Tank exhaust deflector (Figure 2, Item 6) for proper orientation. 7. Inspect TRH Tank skids (Figure 2, Item 5) and shock mounts (Figure 2, Item 4) for damage. 8. Inspect TRH Tank drain valve (Figure 2, Item 6) for clogs or damage.	Damage is present which may prevent proper heater operation. Water leaks from water tank. Water tank is dirty, corroded, or encrusted with mineral deposits. Lid does not seal properly or leaks. Lid gasket is dirty, moldy, damaged or corroded. Pressure relief port is dirty or obstructed. Damage to the TRH Tank skids or shock mounts that would make the TRH Tank support unstable. Obstructions in the TRH Tank exhaust deflector or drain valve. TRH Tank drain valve damaged or leaking.

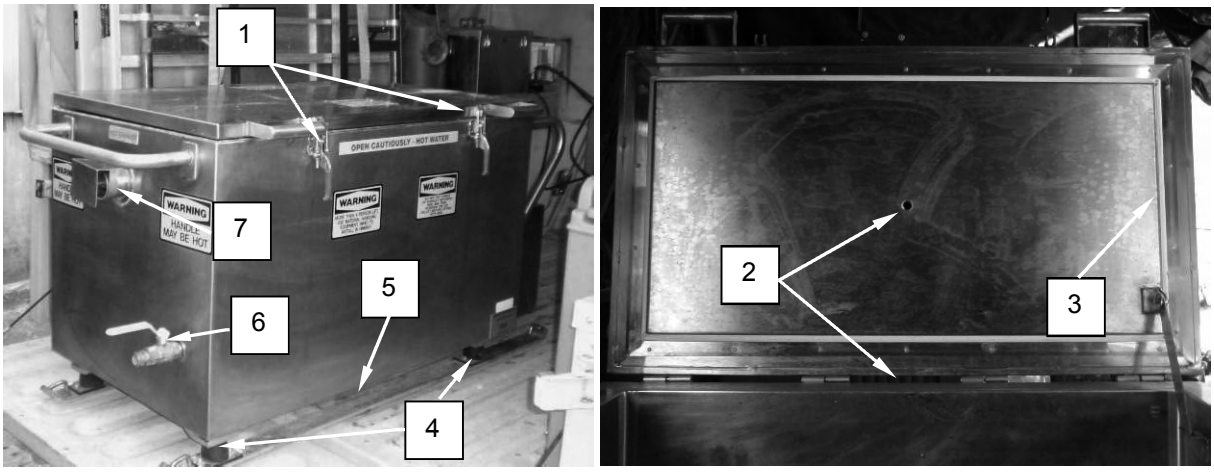


Figure 2. PMCS of TRH Tank.

Table 1. Preventive Maintenance Checks and Services for Assault Kitchen. - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
2	Before/ Daily	Tray Ration Heater (TRH) Tank - Continued	9. Check tray pack rack (Figure 3, Item 1) for broken welds. 10. Clean tip of low water sensor probe (Figure 3, Item 2).	Tray pack rack is broken or bent. Low water sensor probe is dirty, corroded, or encrusted with mineral deposits.
3	Before/ Daily	Fuel System, TRH	1. Check fuel can fuel level, refill as necessary. 2. Inspect fuel line (Figure 3, Item 5) for leaks. 3. Inspect fuel filters for damage or excessively dirty filter. One filter is located on the TRH fuel line (Figure 3, Item 4) and one filter is located in the TRH Burner housing (Figure 3, Item 3). 4. Check fuel can adapter (Figure 3, Item 6) for proper installation and presence of dip tube and fuel.	Fuel can is empty, damaged, or leaks. Fuel line is damaged, leaks, or is clogged. Fuel filter is clogged or damaged. Fuel can adapter is damaged, clogged, or improperly installed.

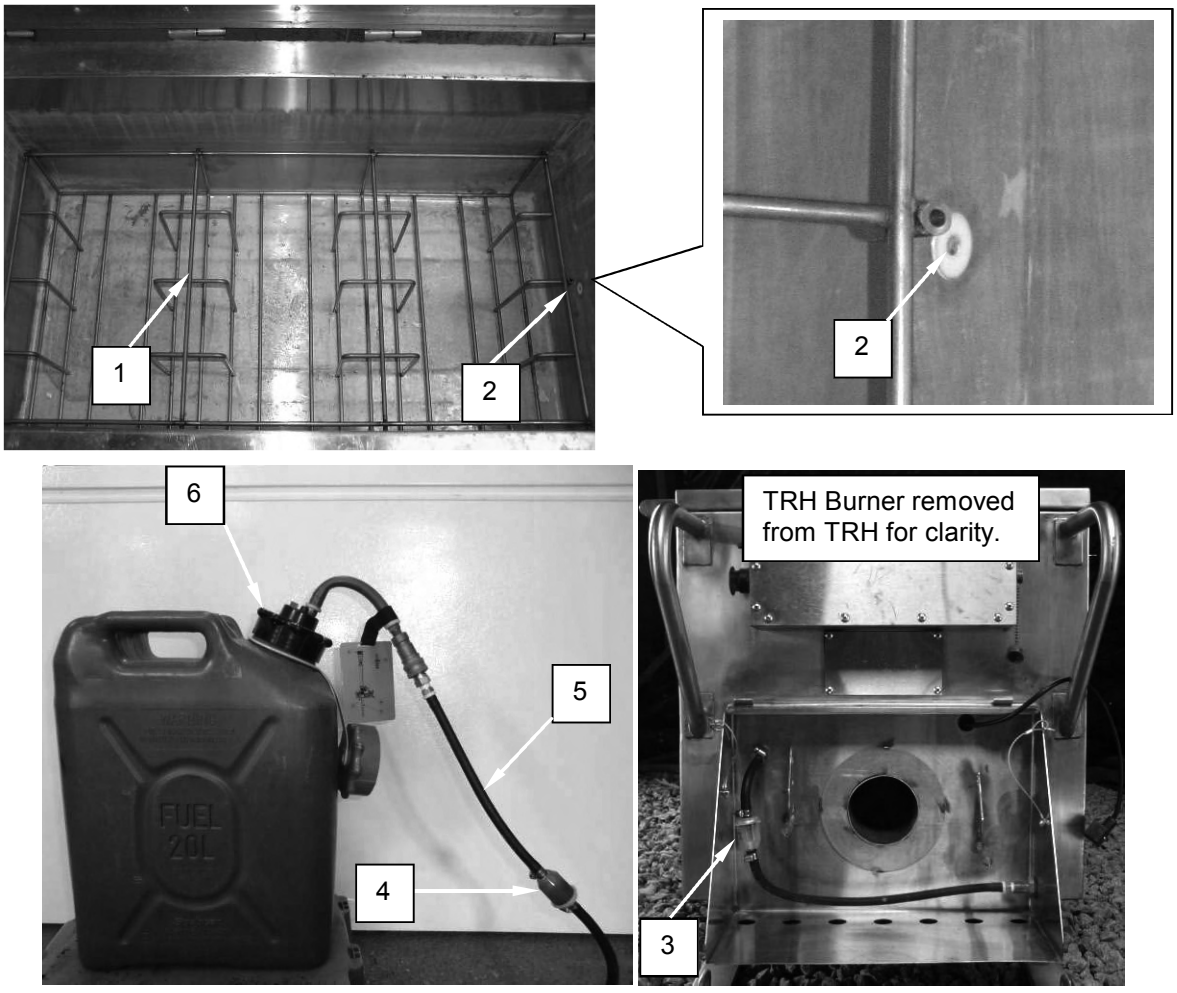


Figure 3. PMCS of AK Fuel and Electrical Systems.

Table 1. Preventive Maintenance Checks and Services for Assault Kitchen. - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
4	Before/ Daily	Electrical System, TRH	1. Inspect the Power Inverter (Figure 4, Item 1) for damage or loose installation. 2. Inspect electrical connections for secure installation from TRH tank to inverter and inverter to vehicle including NATO plug, if equipped.	Damage is present to prevent the use of the inverter. Inverter or NATO plug connections are dirty, damaged, or clogged. TRH power line is damaged or improperly installed.
5	Before/ Daily	Utensils, Food Service	1. Inventory items (WP 0002, Table 6). 2. Inspect utensils for cleanliness and serviceability.	Food service utensils required for service are missing. Damage is present to prevent proper use of utensils. Utensils are dirty, corroded, damaged, or missing.
6	Before/ Daily	Containers, Food Service	1. Inspect insulated food carrier (Figure 4, Item 3) for damage and cleanliness. 2. Inspect side loading pan carrier (Figure 4, Item 4) for damage and cleanliness. 3. Inspect insulated beverage dispensers (Figure 4, Item 5) for damage and cleanliness. 4. Inspect ice chest (Figure 4, Item 2) for damage and cleanliness.	Damage is present to prevent proper use of food or beverage containers. Containers are dirty, corroded, damaged, or leaking.
7	Before/ Daily	TRH Tank Water	Check condition of tank water.	TRH Tank water is dirty, discolored, contains food particles or residue.
8	Before/ After	Tables, Folding	Inspect folding tables for cleanliness and serviceability.	Tables are dirty or corroded. Tables will not properly operate.

Figure 4. PMCS of TRH Power Inverter.

Table 1. Preventive Maintenance Checks and Services for Assault Kitchen. - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
9	Before/ After	Mounting Brackets, Cargo Straps, and Elastic Cord	1. Check all cargo straps and ratchets for tightness or damage. 2. Check all mounting brackets for secure installation.	Cargo straps are loose, frayed, or damaged. Cargo strap ratchets are loose or damaged. Tray brackets are loose.
10	Before/ After	Maintenance and Tool Kits	1. Inventory tool kit (Figure 5, Item 1) IAW WP 0002, Table 4. 2. Inventory Maintenance Kit (Figure 5, Item 2) IAW WP 0002, Table 6.	Tools, test equipment, or tool chests missing, damaged, or otherwise unserviceable. Maintenance kit expendables and spares missing, damaged, or otherwise unserviceable.
11	Before/ After	Cooking Pot Cradle Assembly	Inspect the cooking pot cradle assembly (Figure 5, Item 3), including associated pots and lids.	Equipment missing, damaged or otherwise unserviceable.
12	Before/ After	MBU	Ensure MBU (Figure 5, Item 4) has been operated and maintained IAW TM 10-7310-281-13&P.	MBU missing, damaged, or otherwise unserviceable.

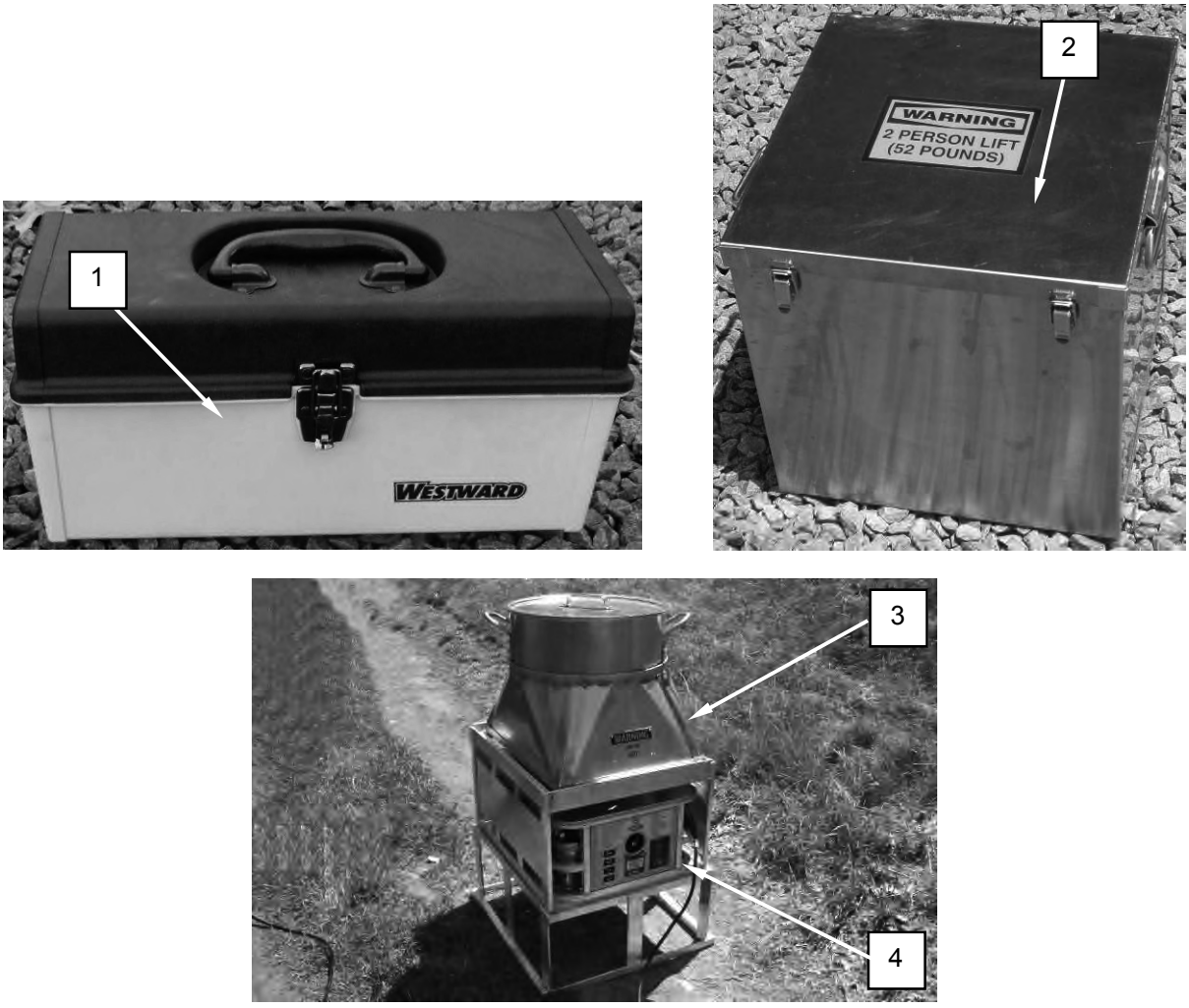


Figure 5. PMCS of Tool Kit, Maintenance Kit, Cooking Pot Cradle Assembly, and MBU.

Table 1. Preventive Maintenance Checks and Services for Assault Kitchen. - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
13	During	TRH	Observe TRH Tank exhaust (Figure 6, Item 1) for excess smoke and/or fuel mist. Troubleshoot IAW WP 0009.	Excess smoke and/or fuel mist emitted from TRH tank exhaust.
14	Weekly	Tray Ration Heater (TRH)	Check to see if water tank is clean, dry and empty when not in service or clean and properly filled with clean water when in service.	Water tank is dirty, corroded, or encrusted with mineral deposits.
15	Weekly	Tables, Serving	Lubricate table hinges with penetrating oil.	Damage or corrosion is present to prevent proper deployment of tables.
16	Weekly	Fire Extinguisher	Inspect Fire extinguisher for proper charge and presence of seal.	Damage to the fire extinguisher. Fire extinguisher not properly charged.

Figure 6. PMCS of TRH.

Mandatory Replacement Parts

There are no replacement parts required for these PMCS procedures.

END OF WORK PACKAGE

CHAPTER 5

OPERATOR MAINTENANCE INSTRUCTIONS FOR ASSAULT KITCHEN

OPERATOR MAINTENANCE

SERVICE UPON RECEIPT

INITIAL SETUP:

Tools and Special Tools

AK Tool Box (WP 0069, Item 3)

References

DA PAM 750-8
DD 361
WP 0002

Personnel Required

Food Service Specialist 92G (2)
Licensed Forklift Operator; MOS non-Specific (1)
MOS non-Specific (1)

SERVICE UPON RECEIPT OF MATERIAL

Unpacking

The components of the AK are packed in the Lightweight Tactical Trailer (LTT). Unpack the AK components from the LTT, remove and discard all packing material. Unpacking will require a minimum of two personnel for one hour for a total man-hour requirement of two hours.

Checking Unpacked Equipment

Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on DD 361, Transportation Discrepancy Report. Check the equipment against the packing slip or hand receipt to see if the shipment is complete. Report all discrepancies in accordance with DA PAM 750-8. Check to see whether the equipment has been modified. Inventory MBU components IAW WP 0002.

END OF TASK

INSTALLATION INSTRUCTIONS

Cargo Strap Ratchet Tightening Procedures

Refer to the following procedures to operate cargo strap ratchets:

CAUTION

To ensure item is properly secured, make sure straps lay flat and are not twisted or tangled at all times.

1. Thread the free end of the cargo strap webbing (Figure 1, Item 2) through the hinge point opening in the ratchet through the slot in the stay bar (Figure 1, Item 1).

2. Pull the cargo strap back over top of the stay bar (Figure 1, Item 1) and back on top of itself.

3. Keeping the strap tight, remove slack and operate the ratchet by simultaneously pulling the ratchet release (Figure 1, Item 3) towards the ratchet handle (Figure 1, Item 4) and moving the ratchet handle (Figure 1, Item 4) in an up and down motion, taking up the slack in the strap webbing.

4. Continue until all slack has been removed from the cargo strap. Tuck away any excess strap.

5. To release ratchet, pull on ratchet release (Figure 1, Item 3) until a click is heard and tension on the cargo strap is released.

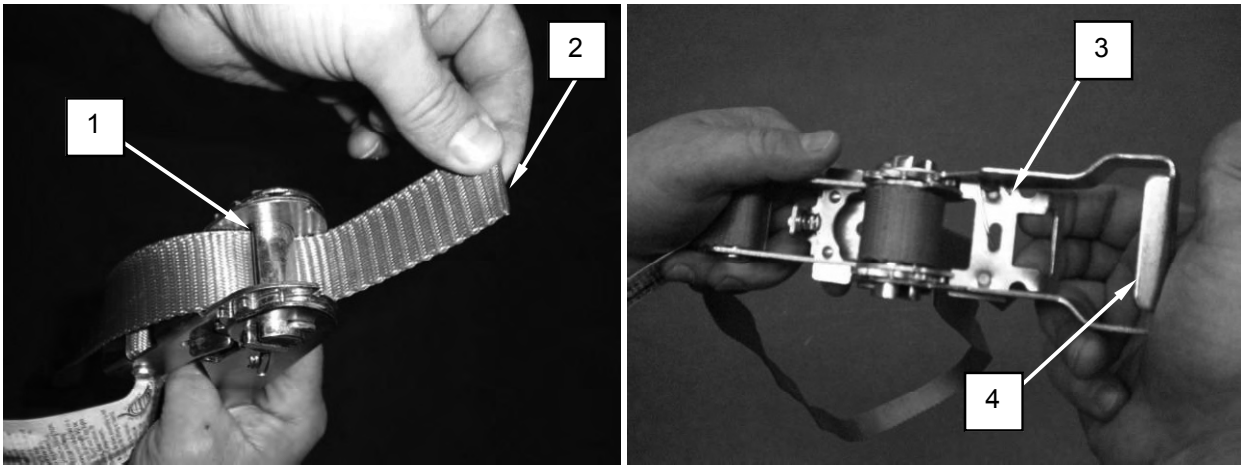


Figure 1. Cargo Strap Operation.

END OF TASK

INSTALLATION INSTRUCTIONS – CONTINUED

M1097 or M1152 HMMWV Installation

For installation of Assault Kitchen components in a HMMWV cargo bed, use the numbering system outlined in Figure 2.

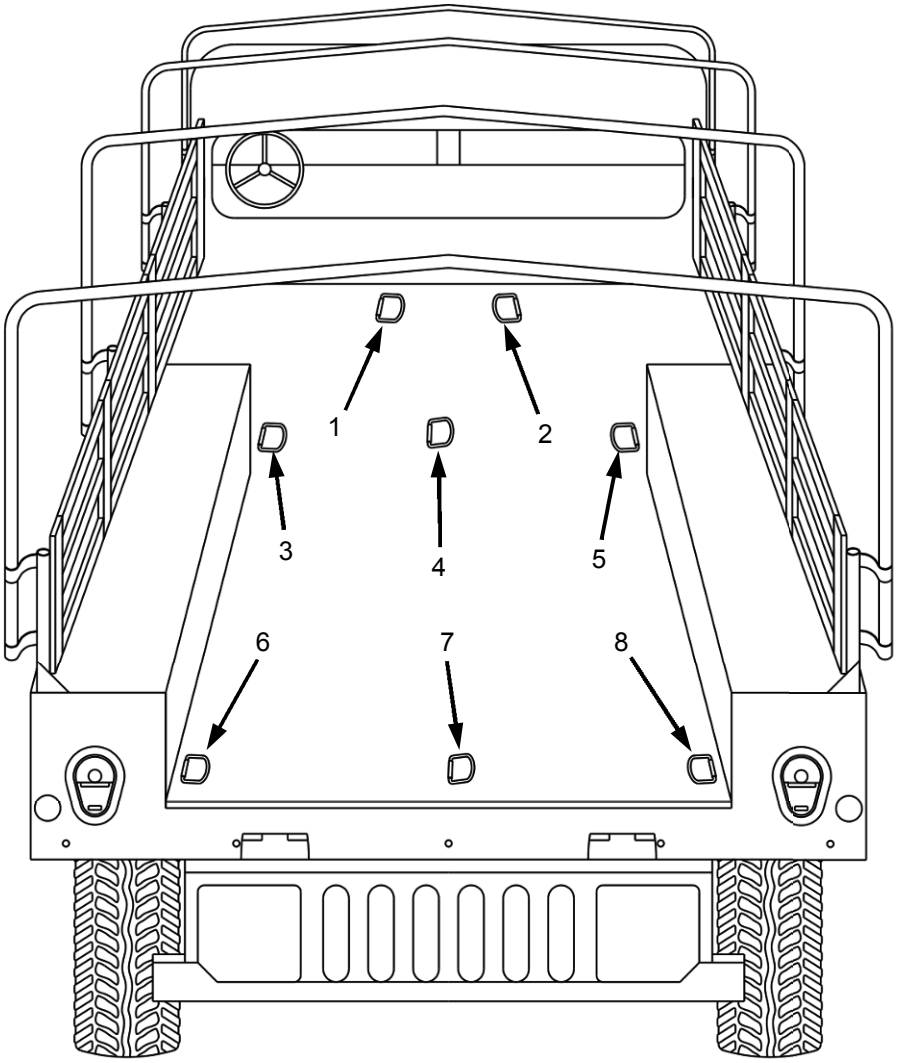


Figure 2. HMMWV D-Ring Placement.

END OF TASK

INSTALLATION INSTRUCTIONS – CONTINUED

Tool Kit and Cargo Net Installation

NOTE

The following HMMWV procedures are suggested. The mission may dictate different equipment and storage.

1. Install cargo net in HMMWV as follows:

WARNING

Exercise caution when using cargo straps to secure equipment in the AK. Improper execution of strapping procedures may cause components to shift or become loose during travel. Failure to observe this warning may cause injury to personnel or damage to equipment.

NOTE

During strapping procedures, adjustments should be made to the placement of components so that they fit properly in the vehicle cargo area. Before tightening straps and ratcheting into place, make adjustments to ensure components are as securely placed as possible.

Final tightening of cargo strap(s) will not be accomplished until all items have been placed and all slack removed from strap(s).

a. Thread a 14-foot cargo strap through D-ring 2 (Figure 3, Item 2) and D-ring 3 (Figure 3, Item 4).

b. Thread another 14-foot cargo strap through D-ring 1 (Figure 3, Item 1) and D-ring 5 (Figure 3, Item 3).

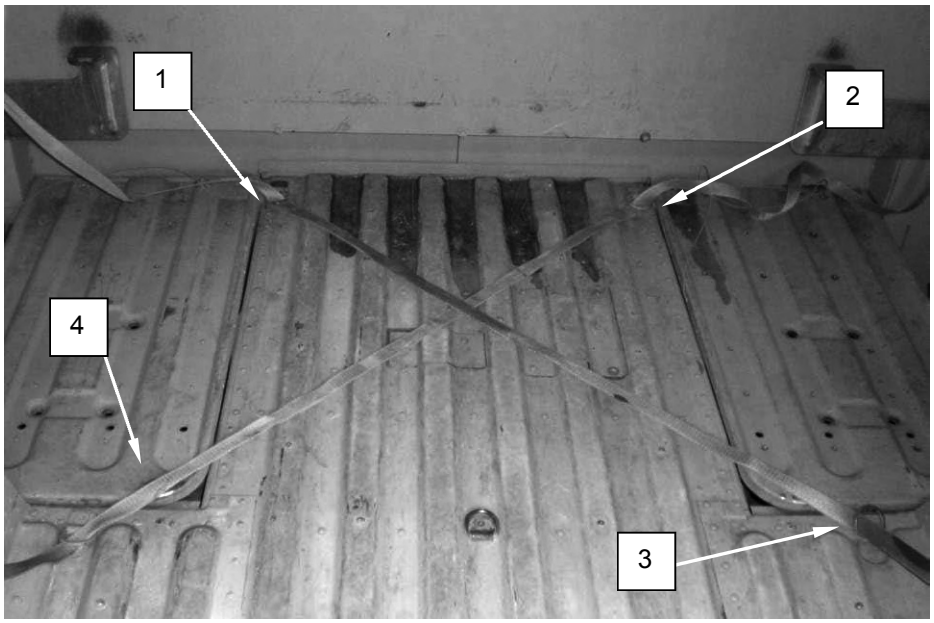


Figure 3. Thread Cargo Straps to Secure Netting.

INSTALLATION INSTRUCTIONS – CONTINUED

c. Lay cargo net flat on ground.

d. Fold top to center and bottom to center. Fold in half several times.

e. Place cargo net (Figure 4, Item 1) over cargo straps in back of HMMWV.

f. Place MBU accessory kit in cargo net. Fold net over MBU accessory kit.

g. Bring cargo straps (Figure 4, Item 2) over cargo net and thread through ratchet, but do not tighten ratchet at this point.

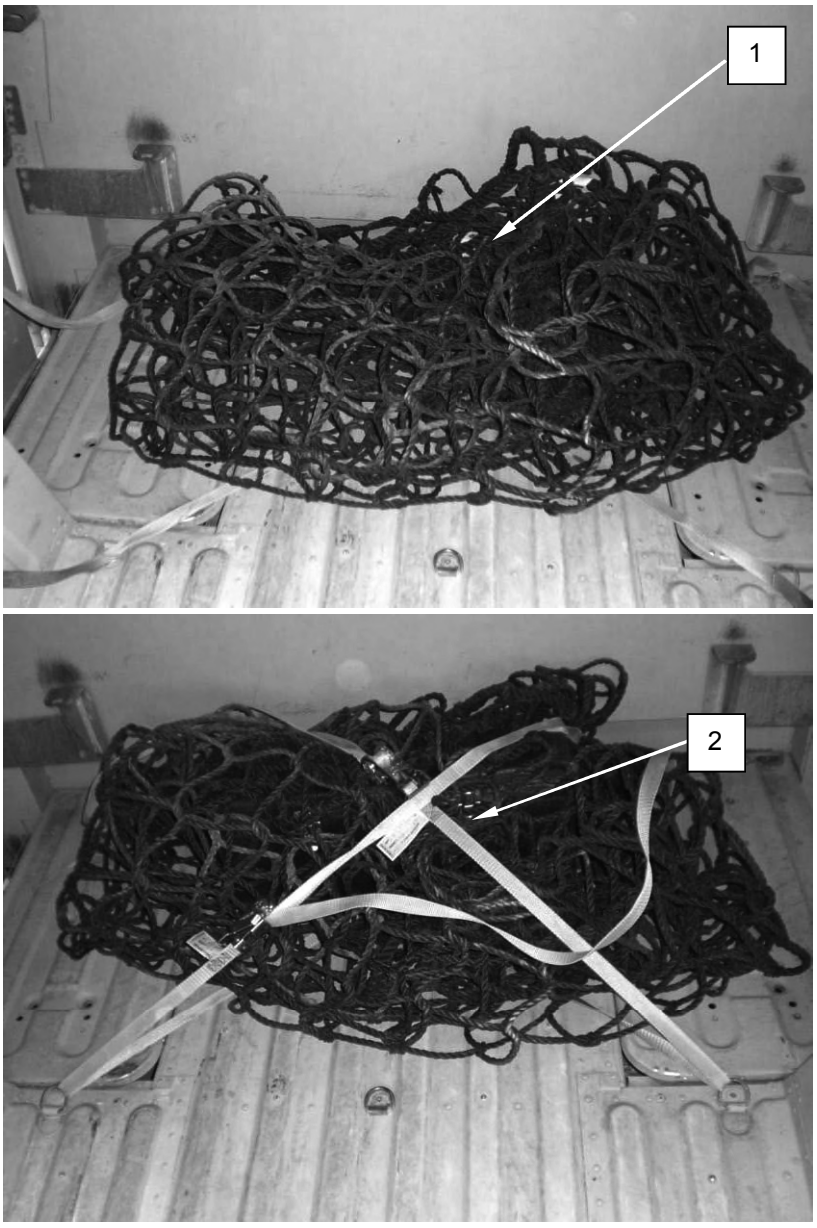


Figure 4. Cargo Strap Placement under Cargo Netting.

END OF TASK

INSTALLATION INSTRUCTIONS – CONTINUED

Ice Chest and Cooking Pot Cradle Installation

1. Install ice storage chest and cooking pot assembly as follows:

    a. Lay one 25-foot cargo strap on driver side of cargo bed floor and pass through D-ring 3 (Figure 5, Item 1) and D-ring 6 (Figure 5, Item 2) on driver side of cargo bed floor from front to rear of cargo bed.

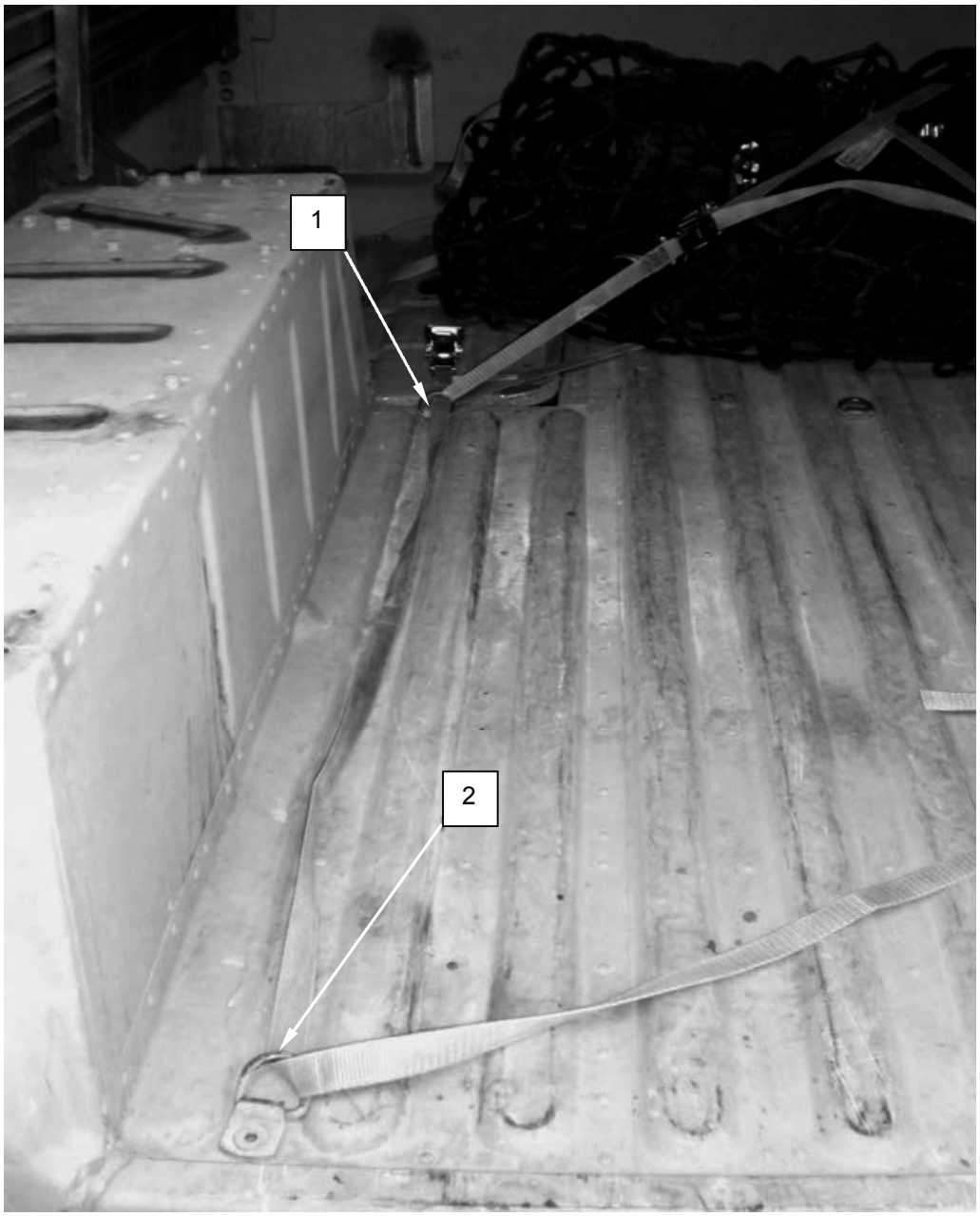


Figure 5. Ice Chest and Cooking Pot Cargo Strap Placement.

INSTALLATION INSTRUCTIONS – CONTINUED

NOTE

- During strapping procedures, adjustments should be made to the placement of components so that they fit properly in the vehicle cargo area. Before tightening straps and ratcheting into place, make adjustments to ensure components are as securely placed as possible.

- Final tightening of cargo strap(s) will not be accomplished until all items have been placed and all slack removed from strap(s).

b. Place one 14-foot cargo strap through D-ring 3 and D-ring 4 on front driver side of cargo bed.

c. Place ice storage chest (Figure 6, Item 1) on driver side of cargo bed on top of cargo straps, with lid opening facing the rear of the vehicle.

d. Place cooking pot assembly burner rack (Figure 6, Item 6) behind ice chest, with opening facing to the rear of the vehicle.

e. Install MBU (Figure 6, Item 5) in burner rack securely; ensuring MBU control panel is facing towards ice storage chest.

f. Invert base rack (Figure 6, Item 4) and place over burner rack.

g. Place cooking pot cradle (Figure 6, Item 3) on top of base rack.

h. Place both cooking pots and lids in cooking pot cradle. Using two elastic cords, secure cooking pot lid to cooking pot assembly by hooking cord to burner rack frame on one side. Connect elastic cords together under lid handle (Figure 6, Item 2), and through cooking pot handles. Hook cord to opposite side of burner rack frame.

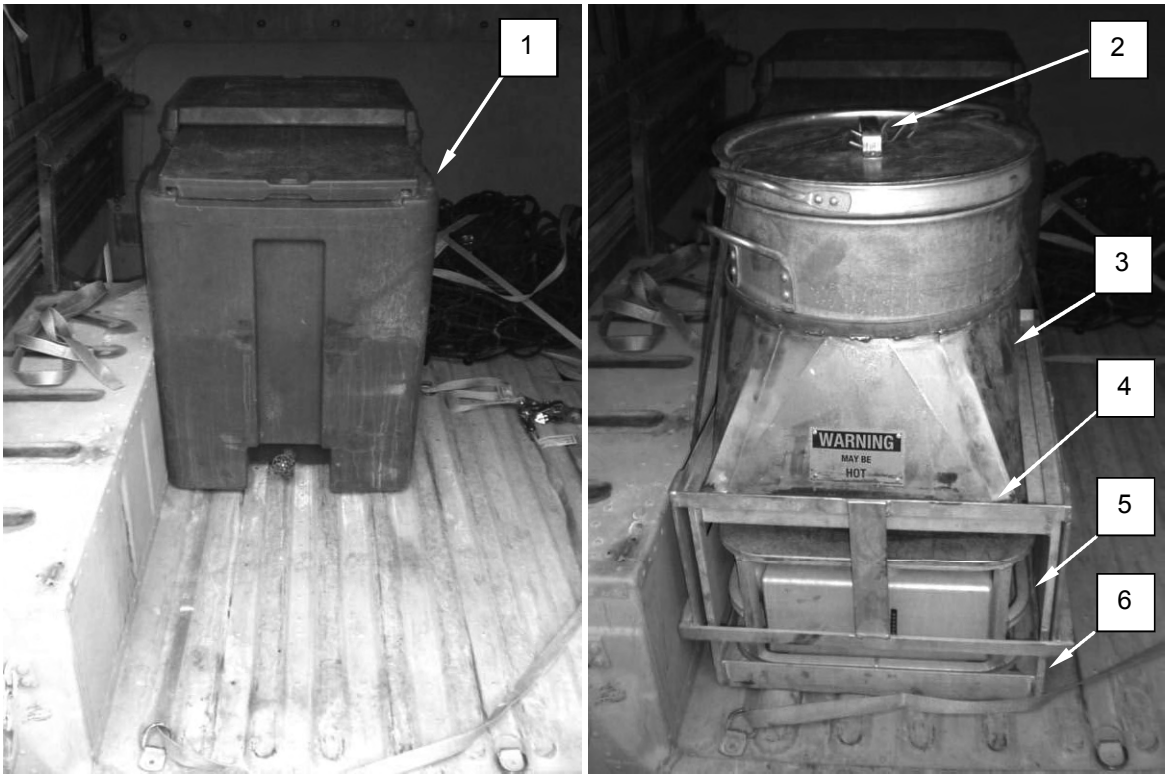


Figure 6. Ice Chest and Cooking Pot Cradle Placement.

INSTALLATION INSTRUCTIONS – CONTINUED

i. Bring the 25-foot cargo strap (Figure 7, Item 2) placed in step a. behind ice storage chest and wrap cargo strap one turn around center post between handles of ice chest (Figure 7, Item 1). Route free end of strap around inner side of cooking pot cradle assembly. Thread loose end of strap through ratchet and tighten on side of ice chest (Figure 8, Item 3).

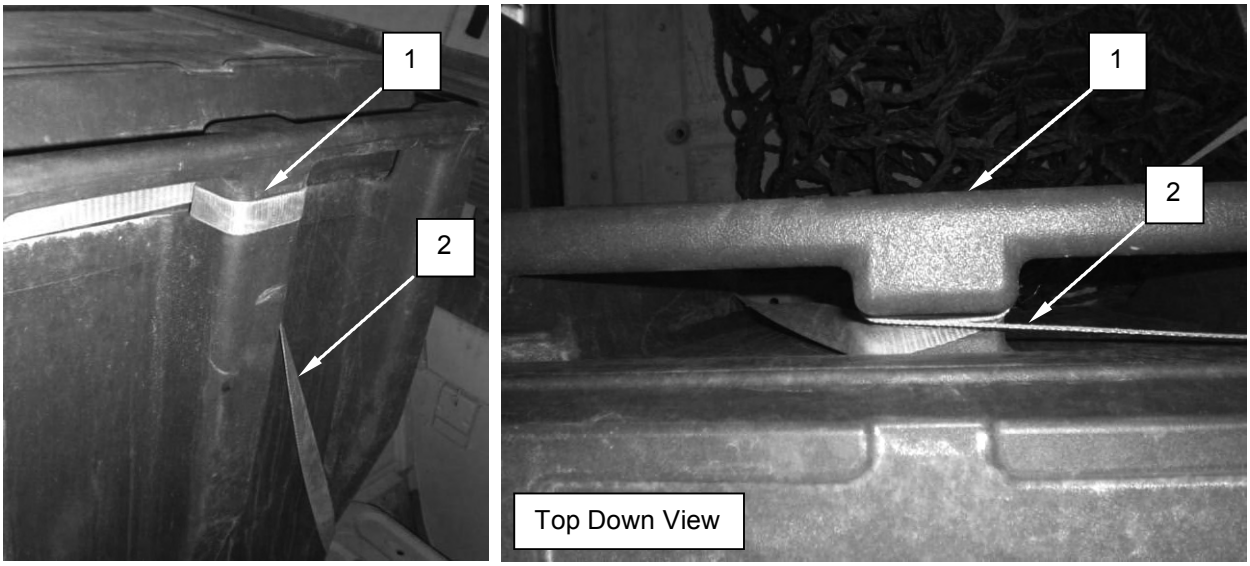


Figure 7. Ice Chest Strapping Procedure.

j. Using the 14-foot cargo strap placed in step b. (Figure 8, Item 1), secure ice storage chest by wrapping strap around ice chest and ratcheting on top of ice chest (Figure 8, Item 2).

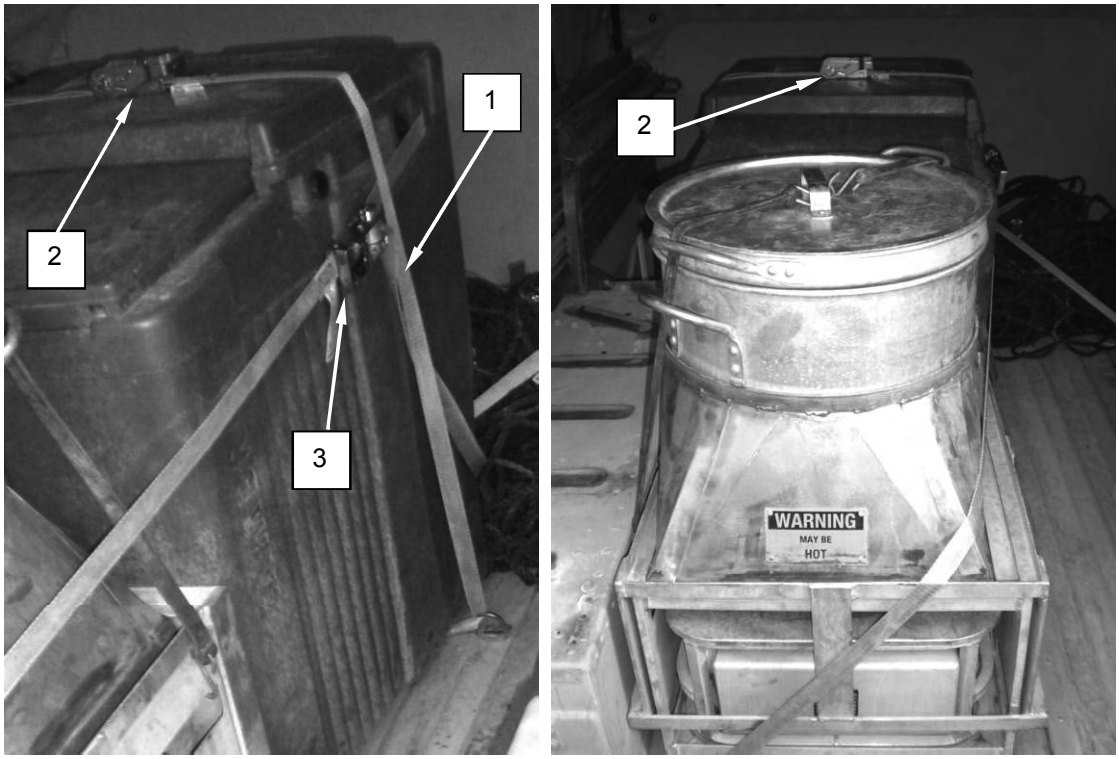


Figure 8. Ice Chest Securing Procedure.

END OF TASK

INSTALLATION INSTRUCTIONS – CONTINUED

Water Can Installation

1. Install water cans as follows:

NOTE

During strapping procedures, adjustments should be made to the placement of components so that they fit properly in the vehicle cargo area. Before tightening straps and ratcheting into place, make adjustments to ensure components are as securely placed as possible.

Final tightening of cargo strap(s) will not be accomplished until all items have been placed and all slack removed from strap(s).

a. Starting at the D-ring 8 (Figure 9, Item 4), place six water cans with the spouts facing passenger side (Figure 9, Item 1).

b. Thread a 14-foot cargo strap through D-ring 8, then through the water can handles, and then through D-ring 5.

c. Pass the free end of the cargo strap back through the water can handles, route strap through ratchet, and place on side of rear water can (Figure 9, Item 3). Do not tighten strap all the way at this time.

d. Using another 14-foot cargo strap, wrap strap around water cans and under previous strap. Center ratchet on side of water cans (Figure 9, Item 2).

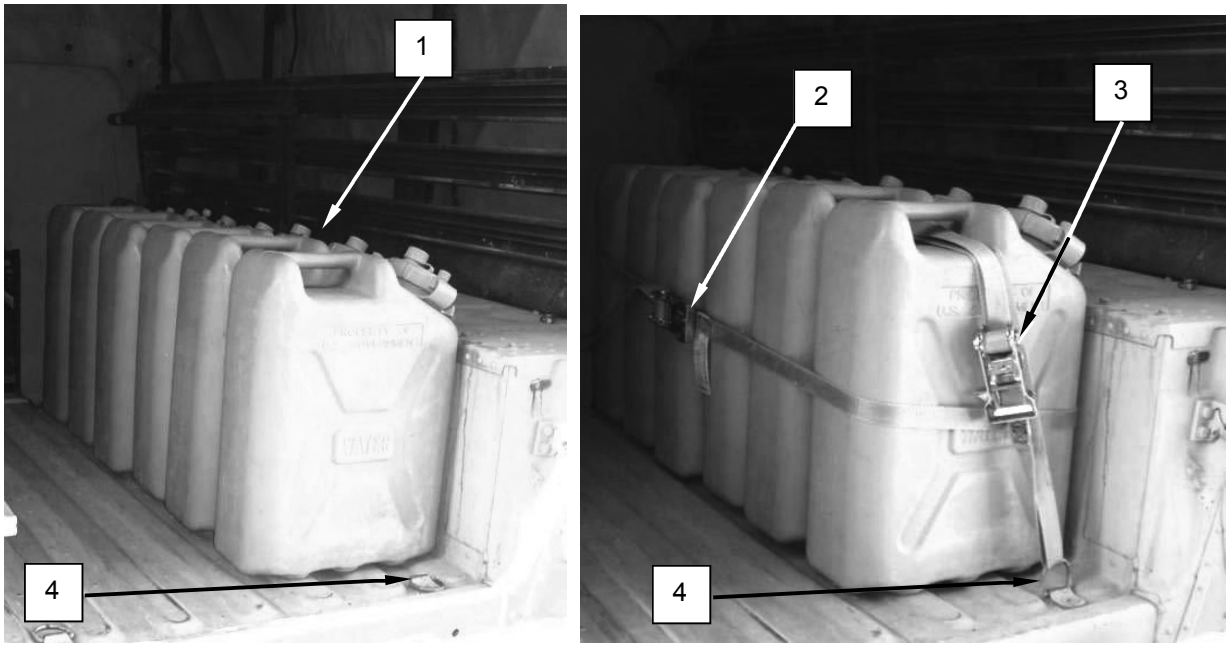


Figure 9. Water Can Placement.

INSTALLATION INSTRUCTIONS – CONTINUED

e. Tighten both ratchets for a secure fit.

NOTE

Cargo may be added to support field feeding missions. Ensure that the MBU accessory kit is also being secured with the cargo net. It is generally a good idea to install components, such as M59A, griddle adapter, extra rations, etc., before securing cargo to allow for proper placement of AK components.

2. Ensure all slack is removed and all straps are tightened in the HMMWV at this time.

END OF TASK

INSTALLATION INSTRUCTIONS – CONTINUED

Preferred LTT Installation

For installation of Assault Kitchen components in a LTT, use the alpha-numeric system outlined in Figure 10. D-rings assigned a number are standard LTT D-rings.

NOTE

D-rings A and B each have two elastic cords permanently installed. D-rings P and J each have one elastic cord permanently installed.

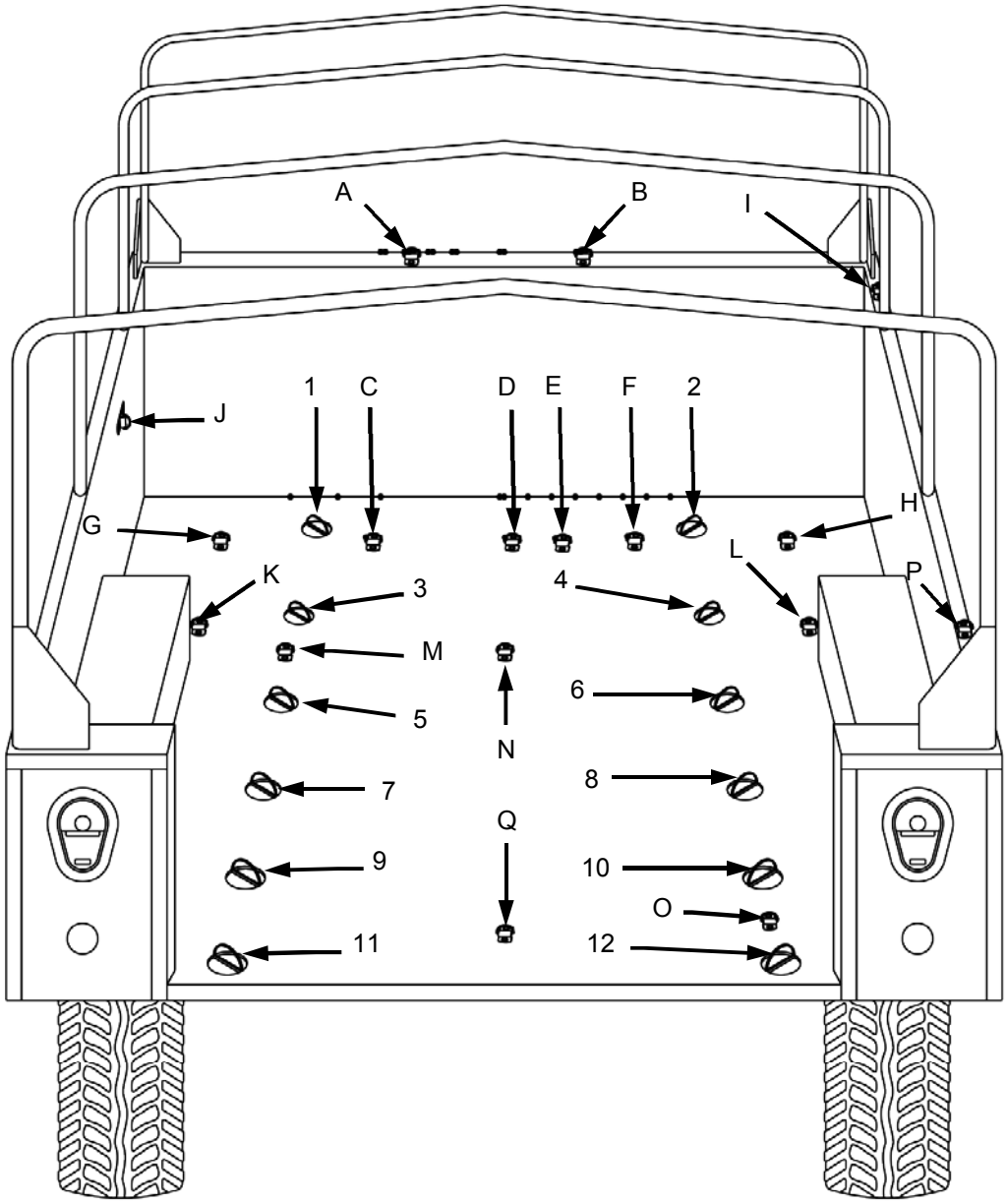


Figure 10. LTT D-ring Placement.

END OF TASK

INSTALLATION INSTRUCTIONS – CONTINUED

For installation of Assault Kitchen components on a LTT, it will be necessary to install storage racks that secure AK components. To install storage racks and AK components, use the following procedures:

Driver Side Storage Rack Installation

1. Install LTT driver side storage rack assembly as follows:

   a. Remove hardware from storage rack assembly support leg.

   b. Remove the twelve top mounted bolts, large washers, and lockwasher from the four canopy support posts (Figure 11, Item 1) on the driver side of the LTT. Retain large washer and discard bolt and lockwasher.

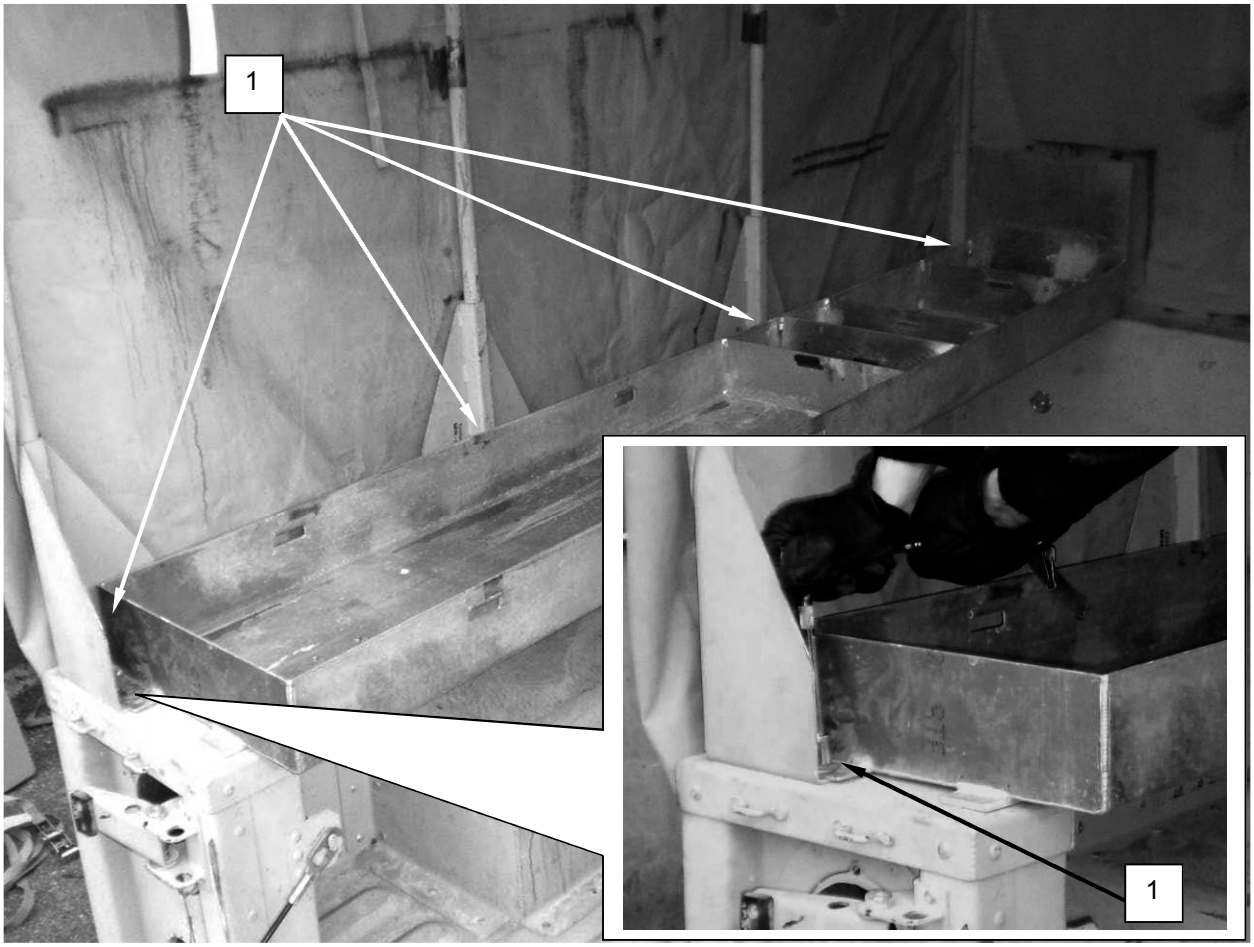


Figure 11. LTT Driver Side Storage Rack.

   c. Place storage rack into position and align storage rack screw holes with canopy support post bolt holes.

   d. Secure storage rack to LTT by hand tightening twelve canopy support bolts, the lockwasher provided with tray, and the retained large washer.

INSTALLATION INSTRUCTIONS – CONTINUED

e. Align driver side storage rack with wheel well bolt hole (Figure 12). Install and tighten bolt using two personnel. One person should place bolt and hold in place from inside cargo bed while the other tightens nut from outside wheel well.

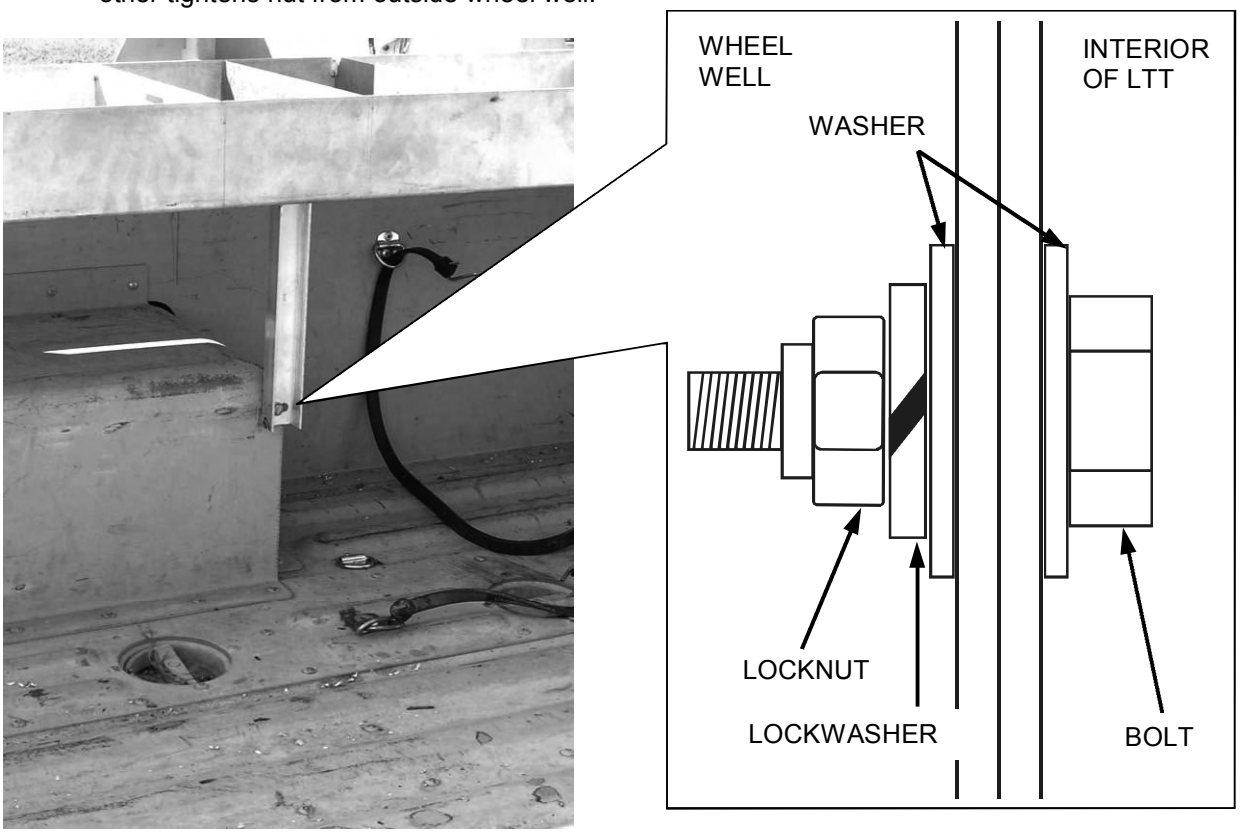


Figure 12. Securing LTT Driver Side Storage Rack to Wheel Well.

INSTALLATION INSTRUCTIONS – CONTINUED

CAUTION

Be careful not to over tighten canopy support bolts, because over tightening bolts may strip the threaded inserts installed on the LTT.

f. Securely tighten canopy support bolts (Figure 13, Item 1), as required.

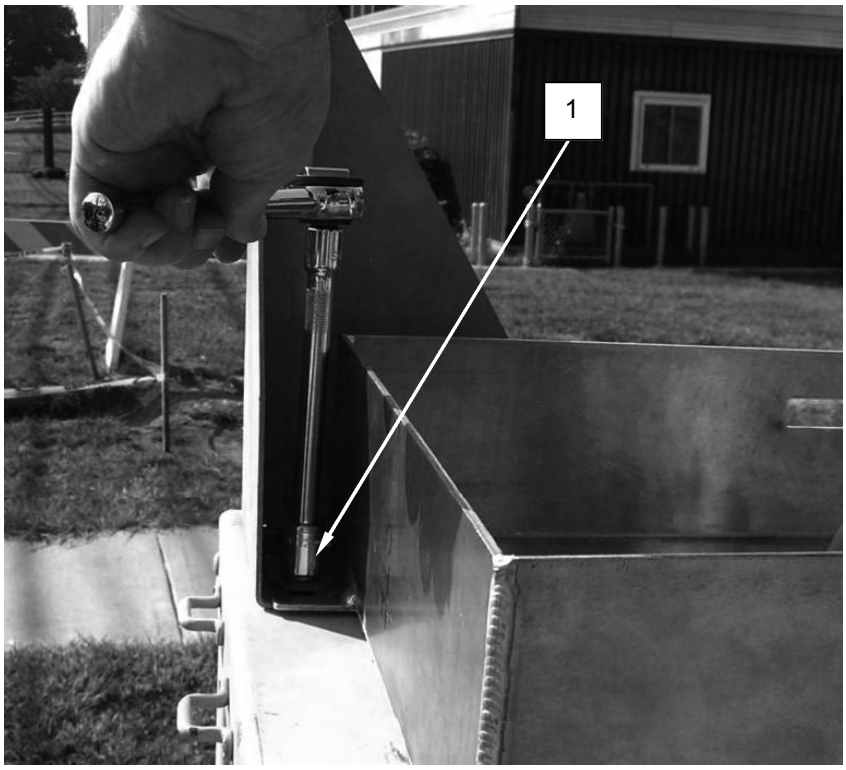


Figure 13. Securing LTT Driver Side Storage Rack.

END OF TASK

INSTALLATION INSTRUCTIONS – CONTINUED

Passenger Side Storage Rack Installation

1. Install LTT passenger side storage rack assembly as follows:

   a. Remove three side mounted bolts (Figure 14, Item 2) from the middle two canopy support posts (Figure 14, Item 1) on passenger side of LTT.

   b. Remove connecting hardware from bottom of storage rack support bracket if installed.

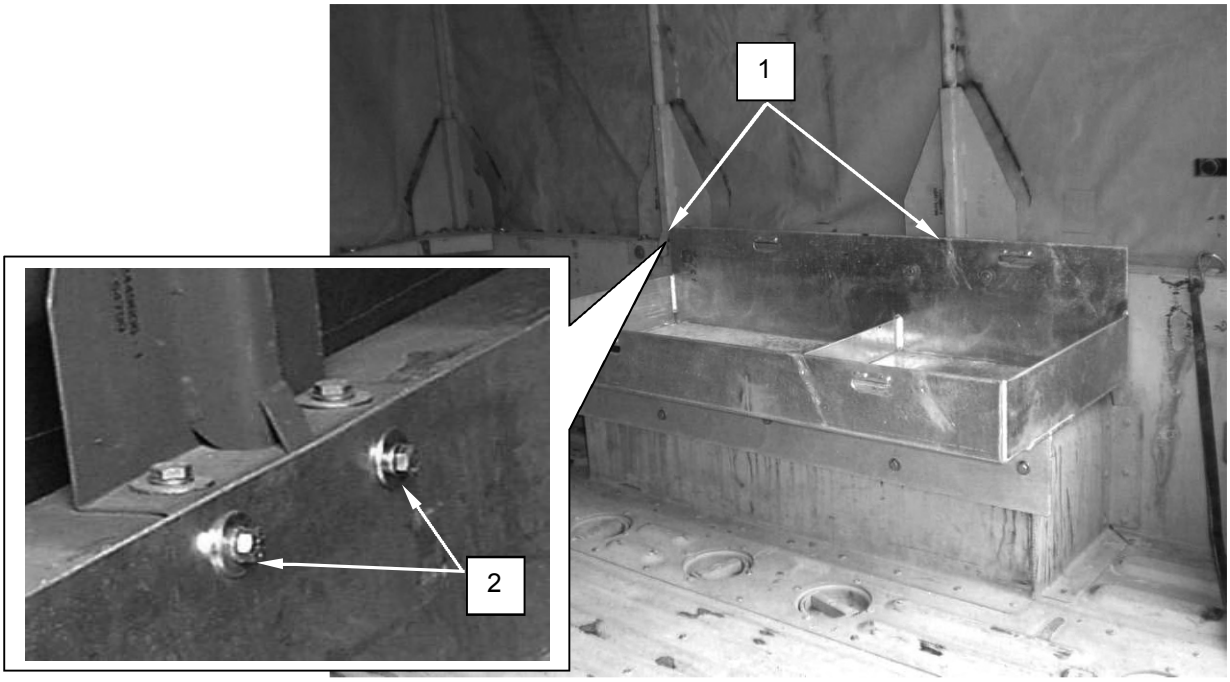


Figure 14. LTT Passenger Side Storage Rack.

INSTALLATION INSTRUCTIONS – CONTINUED

c. Align storage rack bracket holes with wheel well bolt holes.

d. Install five bolts (Figure 15, Item 1 and Item 2) using washers (Figure 15, Item 3), lockwasher (Figure 15, Item 4), and locknut (Figure 15, Item 5) to secure storage rack to LTT wheel well and support posts. Tighten securely.

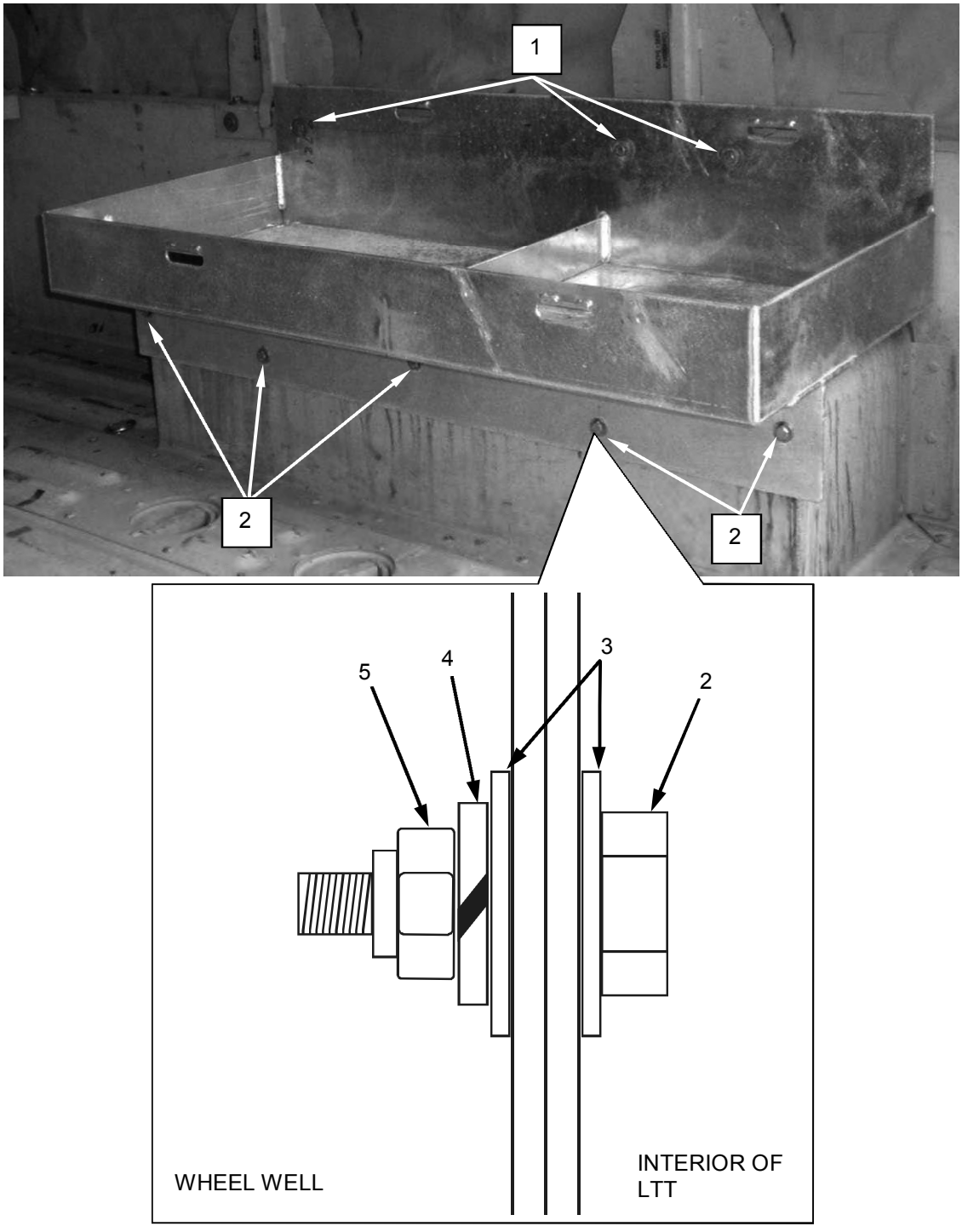


Figure 15. Securing LTT Passenger Side Storage Rack.

END OF TASK

INSTALLATION INSTRUCTIONS – CONTINUED

Side Loading Pan Carrier (SLPC) Installation

1. Install large insulated SLPCs on passenger side of LTT as follows:

   a. Stack two SLPCs (Figure 16, Item 1) in front passenger corner of LTT flush against the D-ring 4, approximately 5-inches from storage rack.

Figure 16. SLPC Placement.

   b. Place a 25-foot cargo strap ratchet on top of SLPC, and feed strap through handle facing tailgate with loose end draped down the side of the SLPC.

   c. Pass strap through D-ring L (Figure 17, Item 1) on rear side of SLPC.

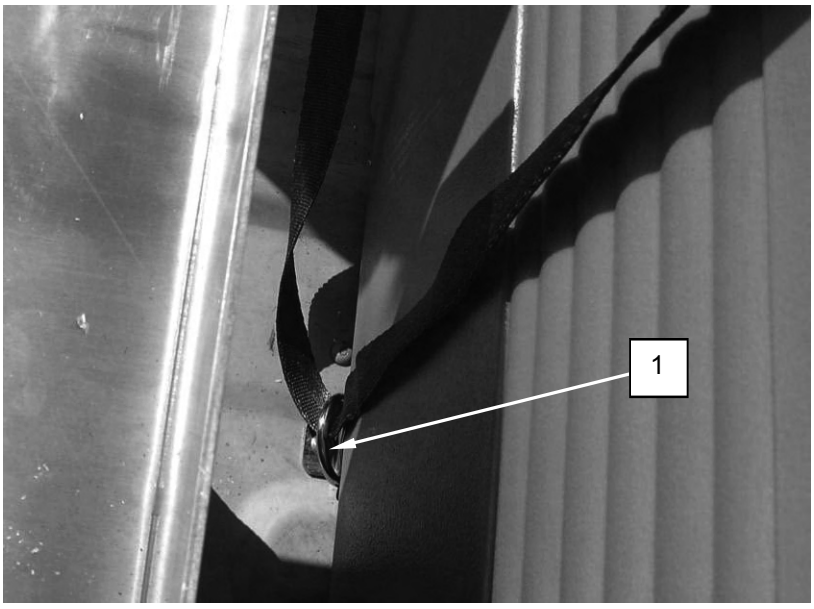


Figure 17. SLPC Strap Down.

INSTALLATION INSTRUCTIONS – CONTINUED

d. Bring strap back up to top of SLPC, through handles, and down front side of SLPC.

e. Pass strap through D-ring H (Figure 18, Item 1) on front side of SLPC.

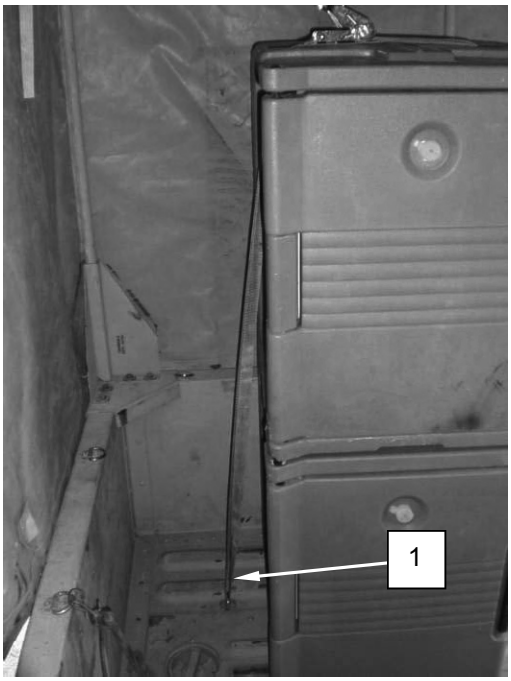


Figure 18. SLPC Strap Down.

f. Bring strap back up to top of SLPC, through handle, and ratchet on top (Figure 19, Item 1).

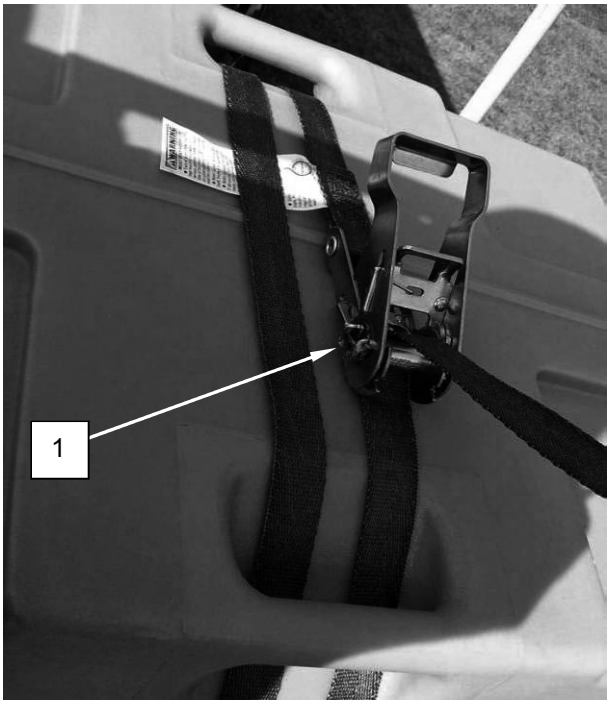


Figure 19. SLPC Ratchet Placement.

END OF TASK

INSTALLATION INSTRUCTIONS – CONTINUED

Insulated Food Container (IFC) Installation

1. Install IFCs in passenger side storage rack as follows:

    a. Using a 25-foot cargo strap, pass loose end of strap through outside left opening of passenger side storage rack, outside in, and secure ratchet end (Figure 20, Item 1) and strap end (Figure 20, Item 2) between canopy and canopy support pole to keep strap out of the way.

Figure 20. IFC Placement.

INSTALLATION INSTRUCTIONS – CONTINUED

b. Stack five IFCs (Figure 21, Item 1) in passenger side storage rack.

Figure 21. IFC Placement.

INSTALLATION INSTRUCTIONS – CONTINUED

c. Bring the free end of the cargo strap in front of IFCs, pass through inner left opening in storage rack (Figure 22, Item 5). Hang ratchet in front of IFCs, feed strap through ratchet, and tighten ratchet (Figure 22, Item 1). Tuck strap excess behind IFC stack and out of the way.

d. Using a 14-foot cargo strap, wrap cargo strap around second container in stack from the top IFC, one turn around the first canopy support post (Figure 22, Item 3), around back of IFC stack, and one turn around the second canopy support post (Figure 22, Item 2). Pass strap through ratchet and, without over tightening, tighten in front of IFCs (Figure 22, Item 4).

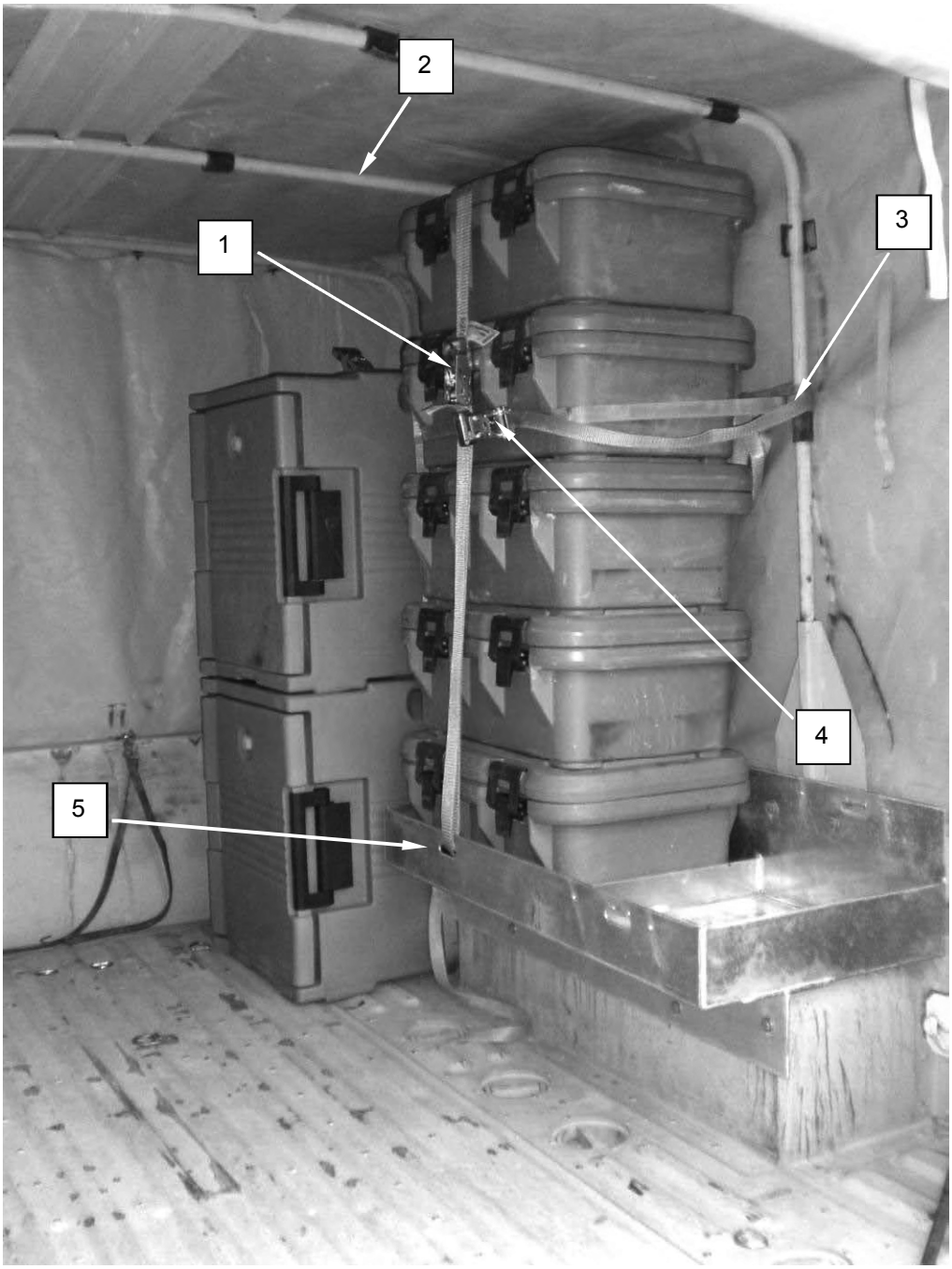


Figure 22. IFC Ratchet Placement.

END OF TASK

INSTALLATION INSTRUCTIONS – CONTINUED

Beverage Dispenser Installation

1. Install two beverage dispensers in passenger side storage rack as follows:

   a. Place one beverage dispenser in storage rack with spout facing rear of LTT.

   b. Pass 14-foot strap end through rear opening of passenger side storage rack. Secure ratchet end by placing between cargo canopy and canopy support pole.

   c. Pass strap over top of beverage dispenser on either side of lid handle and through front opening of storage rack (Figure 23, Item 1).

Figure 23. Beverage Dispenser Placement.

INSTALLATION INSTRUCTIONS – CONTINUED

d. Place second beverage dispenser in storage rack under strap being sure to align handles and relief valve caps of both dispensers.

e. Pass ratchet end of cargo strap over top of beverage dispenser and route strap on opposite side of lid handle as previously routed cargo strap (Figure 24, Item 1).

f. Ratchet cargo strap on side of beverage dispenser (Figure 24, Item 2). Tuck any excess strap out of the way (Figure 24, Item 3).

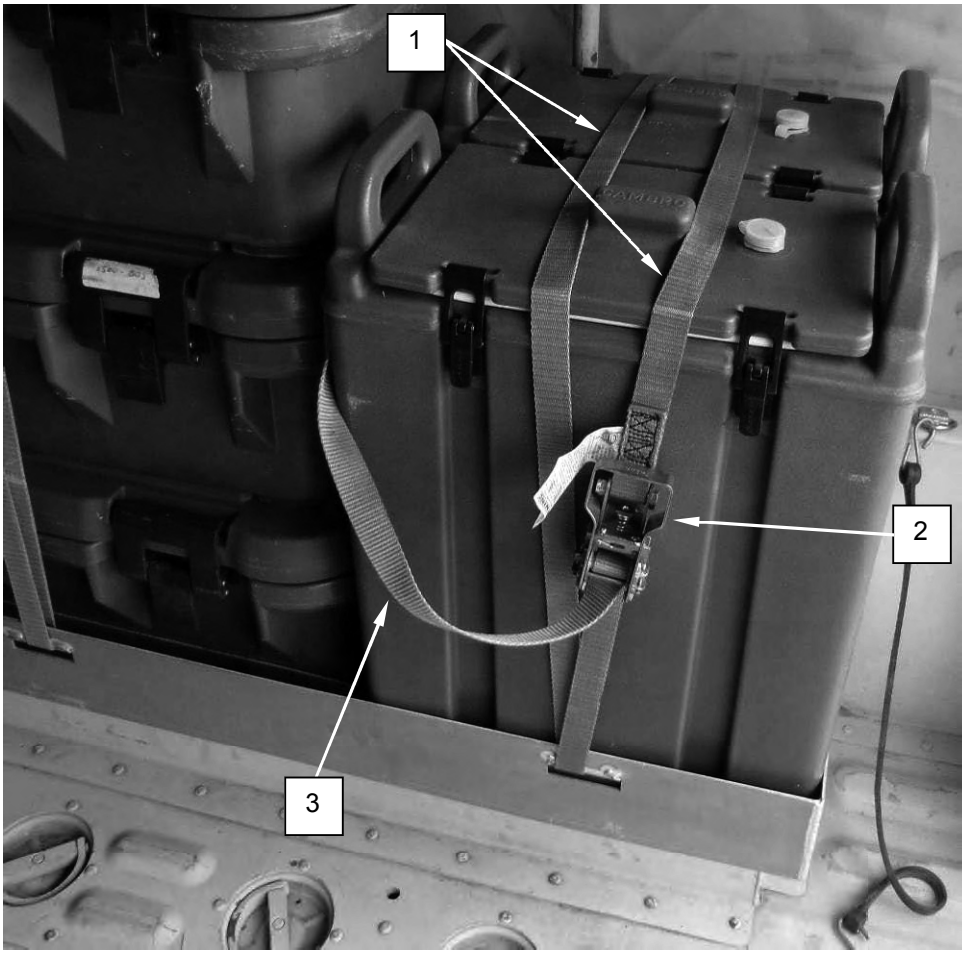


Figure 24. Beverage Dispenser Placement.

INSTALLATION INSTRUCTIONS – CONTINUED

2. Install one beverage dispenser between passenger side storage rack and rear wall of LTT as follows:

   a. Place beverage dispenser between passenger side storage rack and rear wall of LTT (Figure 25, Item 1).

   b. Secure beverage dispenser into place by attaching an elastic cord to the D-ring P on passenger side of LTT wall (Figure 25, Item 2), passing cord through beverage dispenser handles, and connecting to D-ring O on floor (Figure 25, Item 3) at opposite side of beverage dispenser.

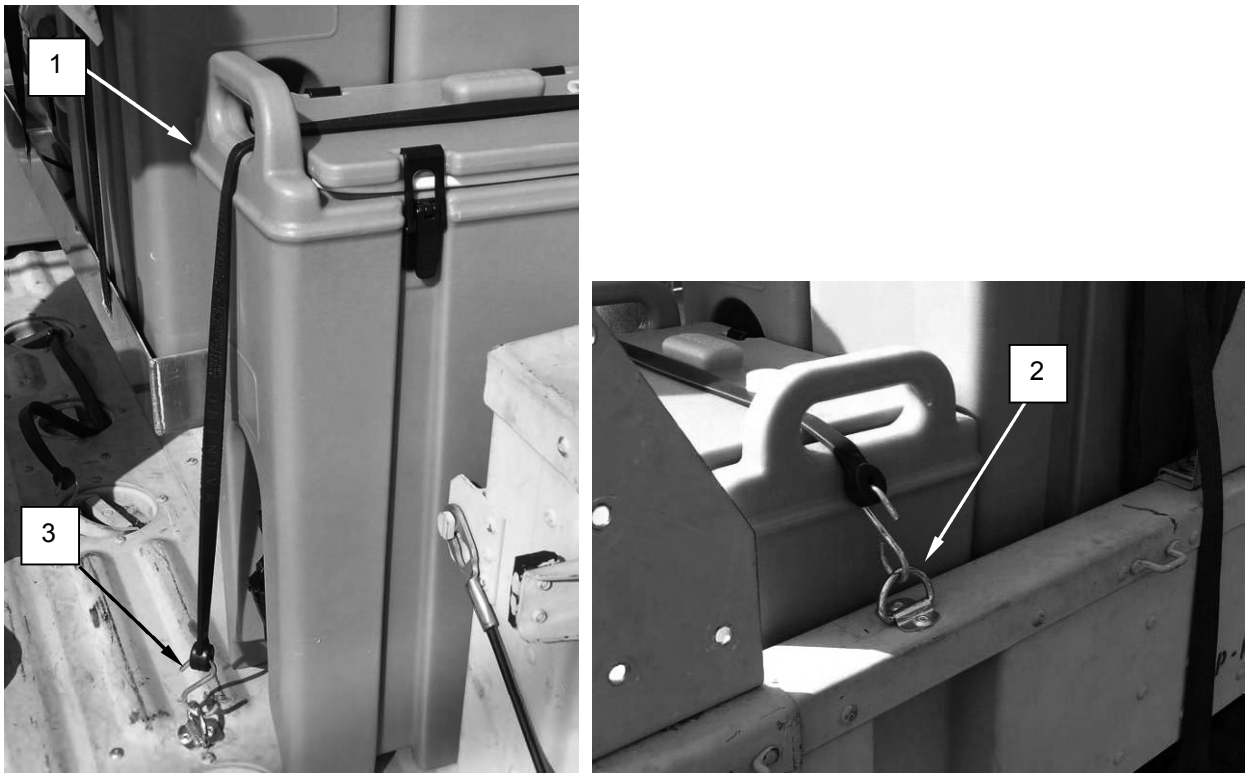


Figure 25. Beverage Dispenser Placement.

INSTALLATION INSTRUCTIONS – CONTINUED

3. Install three beverage dispensers in front of LTT as follows:

    a. Place one beverage dispenser in front passenger side corner of LTT between side loading carrier and front wall of LTT (Figure 26, Item 1).

    b. Align two remaining beverage dispensers next to previously placed dispenser (Figure 26, Item 2).

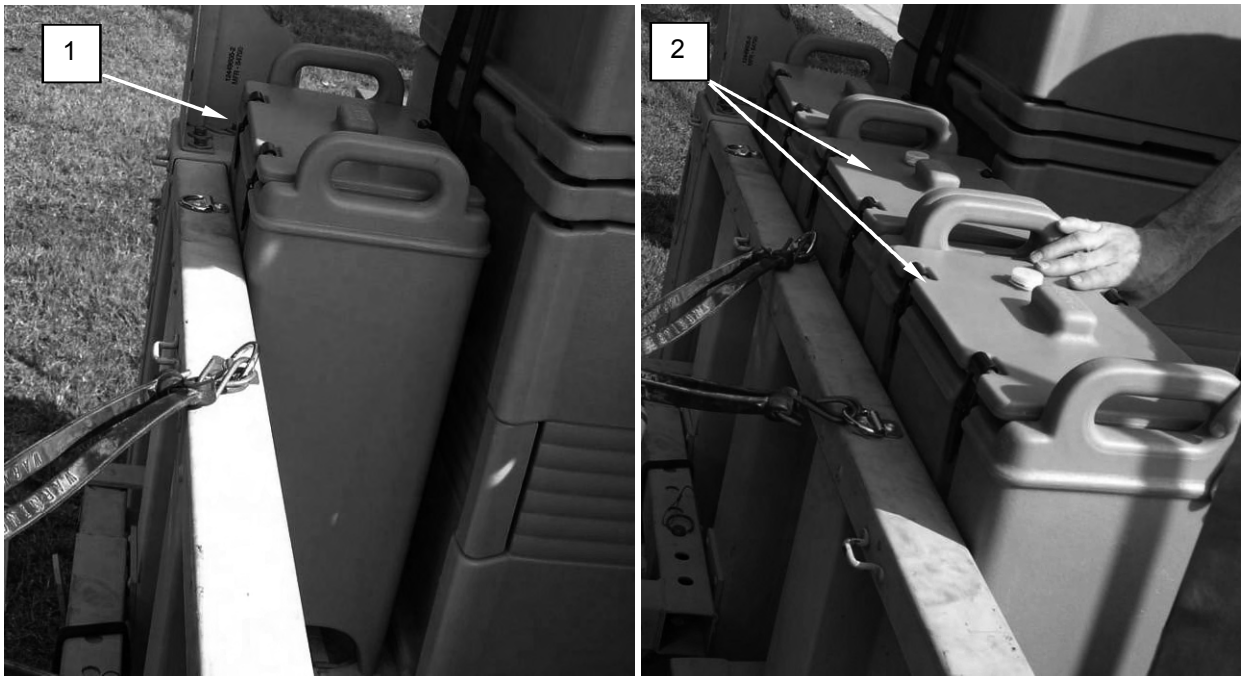


Figure 26. Beverage Dispenser Placement.

INSTALLATION INSTRUCTIONS – CONTINUED

c. Using attached elastic cords, pass cords over top of beverage dispensers and attach to D-ring C (Figure 27, Item 4), D-ring D (Figure 27, Item 3), D-ring E (Figure 27, Item 2), and D-ring F (Figure 27, Item 1) on LTT cargo floor.

Figure 27. Beverage Container Elastic Hookups.

INSTALLATION INSTRUCTIONS – CONTINUED

d. Using a 14-foot cargo strap, pass cargo strap through D-ring 1 (Figure 28, Item 1).

Figure 28. Strap Down Beverage Containers.

e. Run cargo strap over beverage containers, through handles, and through D-ring I (Figure 29, Item 1) on top of passenger side wall of LTT. Run strap to left or right of lid handles.

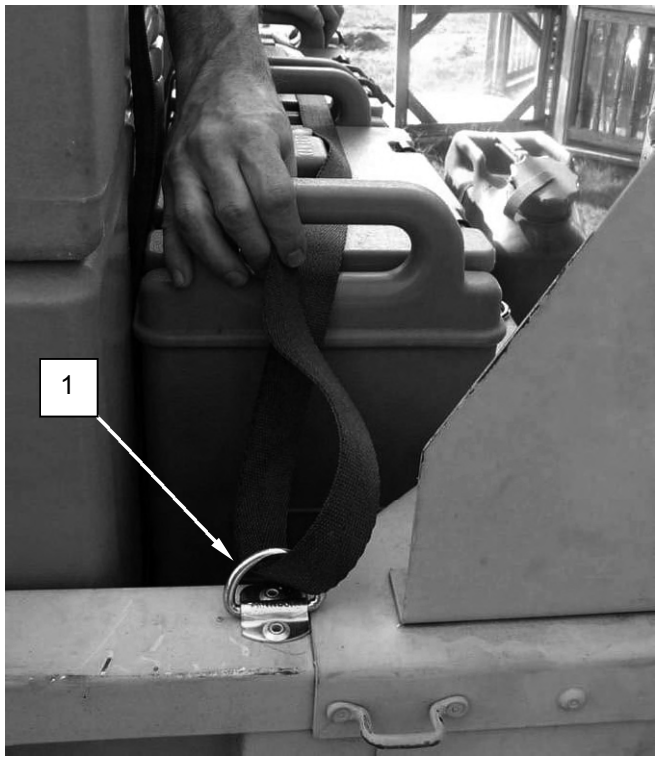


Figure 29. Strap Down Beverage Containers.

INSTALLATION INSTRUCTIONS – CONTINUED

f. Run cargo strap back over beverage containers and ratchet into place on left side of beverage container (Figure 30, Item 1). Run strap to opposite side of lid handles used in previous step and tighten. Tuck excess strap out of the way.

Figure 30. Strap Down Beverage Containers.

END OF TASK

INSTALLATION INSTRUCTIONS – CONTINUED

Determine Inverter Installation

NOTE

There are two possible locations for the NATO receptacle in the HMMWV. A NATO receptacle may be located inside the storage well behind the passenger seat in the HMMWV cargo area. The other possible location is beneath the passenger seat in the front of the HMMWV. The method used to connect the inverter is dependent upon the location of the NATO receptacle.

If HMMWV is equipped with a half door behind passenger seat, then removing the storage well cover is optional.

1. Locate the storage well cover (Figure 31, Item 3) behind the passenger seat in the HMMWV cargo area. Remove the cover by turning the two, quarter-turn fasteners on the storage well cover.

2. Look inside the storage well to see if the HMMWV you are using is equipped with a NATO receptacle (Figure 31, Item 1) in the storage well (Figure 31, Item 2).

   a. If your HMMWV has a NATO receptacle inside the storage well, refer to the paragraph in this WP titled “Preferred Inverter Installation.”

   b. If your HMMWV does not have a NATO receptacle inside the storage well, refer to the paragraph in this WP titled “Alternate Inverter Installation.”

Figure 31. NATO Receptacle Located in Storage Well.

END OF TASK

INSTALLATION INSTRUCTIONS – CONTINUED

Preferred Inverter Installation

1. Remove inverter from hanging bracket by removing the two fasteners (Figure 32, Item 1) from one side of the inverter and loosening the two fasteners (Figure 32, Item 2) on the opposite side of the inverter. Retain fasteners.

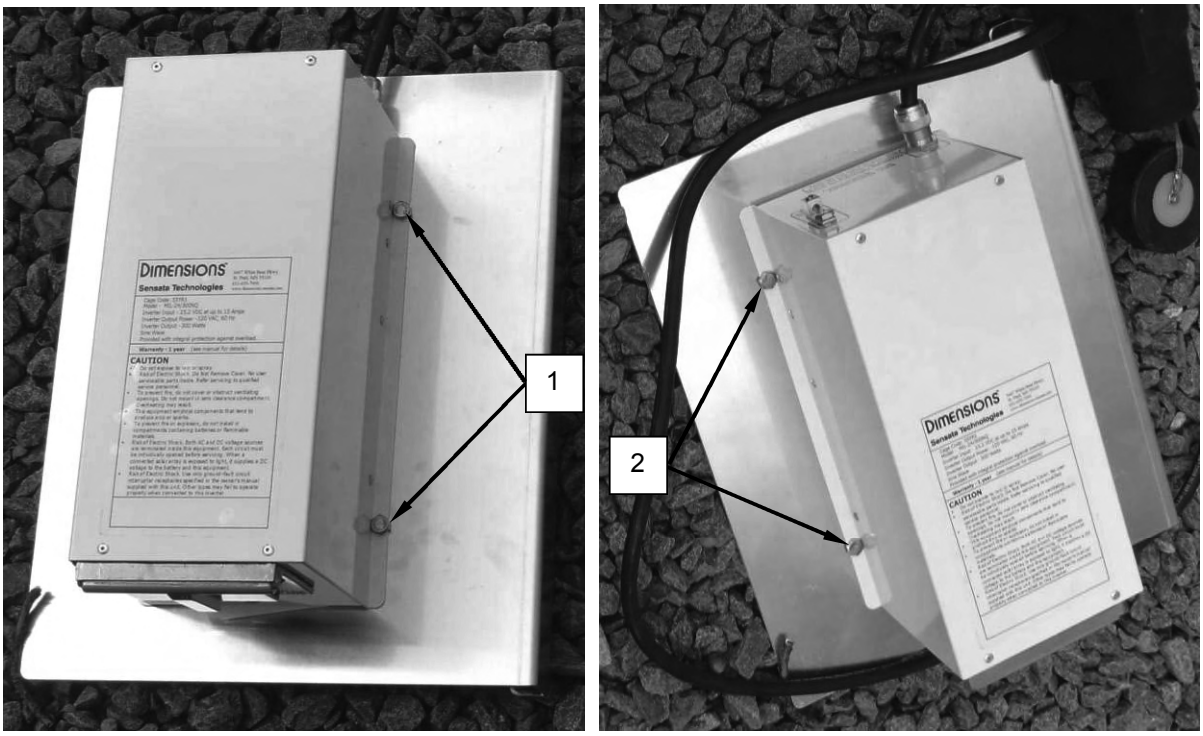


Figure 32. Remove Inverter from Hanging Bracket.

INSTALLATION INSTRUCTIONS – CONTINUED

2. Install inverter in front compartment of LTT driver side storage rack as follows:

   a. Remove caps (Figure 33, Item 1) from NATO plug and NATO adapter.

   b. Press fit NATO plug (Figure 33, Item 2) from inverter into NATO plug adapter (Figure 33, Item 3). Secure excess cord inside LTT storage rack.

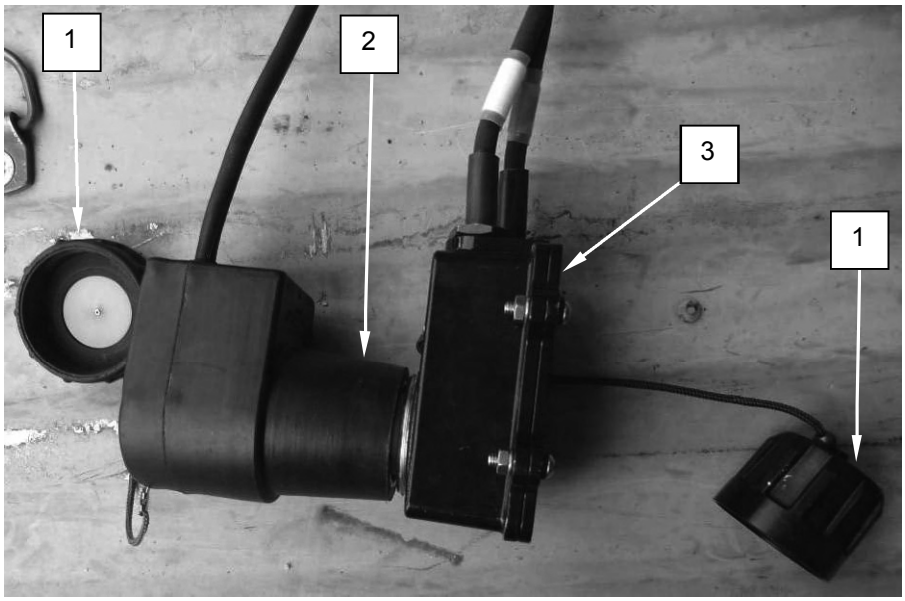


Figure 33. Press Fit NATO Plug into NATO Plug Adapter.

   c. Ensure inverter power cord is connected to press fit adapter assembly securely.

   d. If necessary, remove two bracket retaining bolts (Figure 34, Item 1). Keep bolts, nuts and washers nearby.

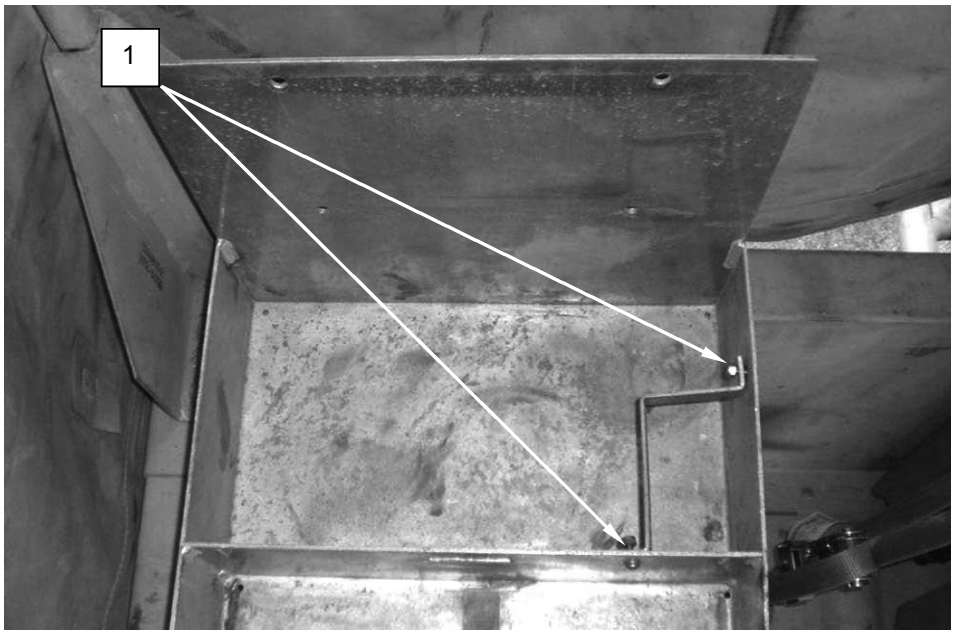


Figure 34. Inverter Power Cord and Press Fit Adapter Placement.

INSTALLATION INSTRUCTIONS – CONTINUED

e. Place press fit adapter top down into right rear corner in front compartment of the driver side storage rack with back of adapter flush with compartment (Figure 35).

Figure 35. Inverter Power Cord and Press Fit Adapter.

f. Ensuring all cords are clear and not obstructing work area, secure NATO plug adapter into place with bracket and two retaining bolts (Figure 36, Item 1).

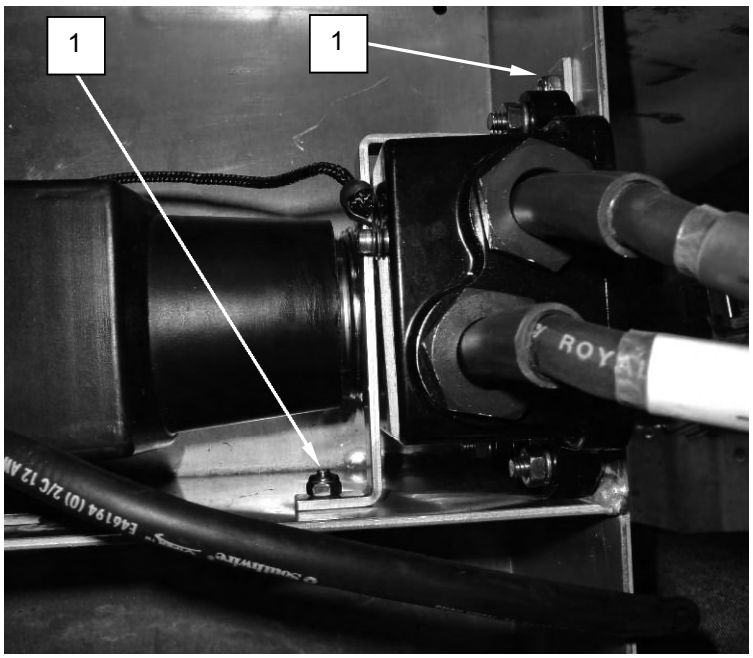


Figure 36. Securing Inverter Power Cord and Press Fit Adapter.

INSTALLATION INSTRUCTIONS – CONTINUED

g. Mount the inverter to the support wall in the front of the driver side storage rack by removing top hex head bolts (Figure 37, Item 1) and loosening bottom hex head bolts. Align the inverter mounting grooves with the storage rack holes so that the inverter controls are facing in.

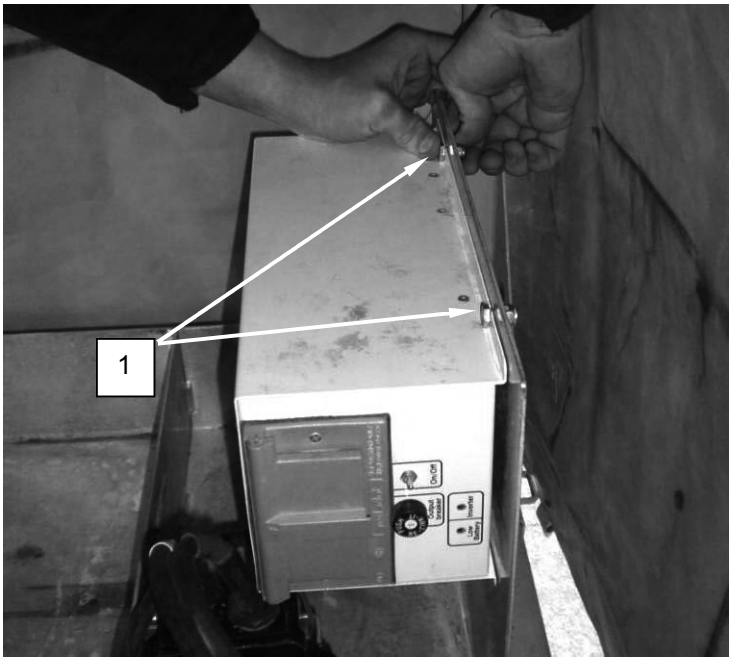


Figure 37. Inverter Placement.

h. Tighten the hex head bolts on top (Figure 38, Item 1) and bottom of inverter.

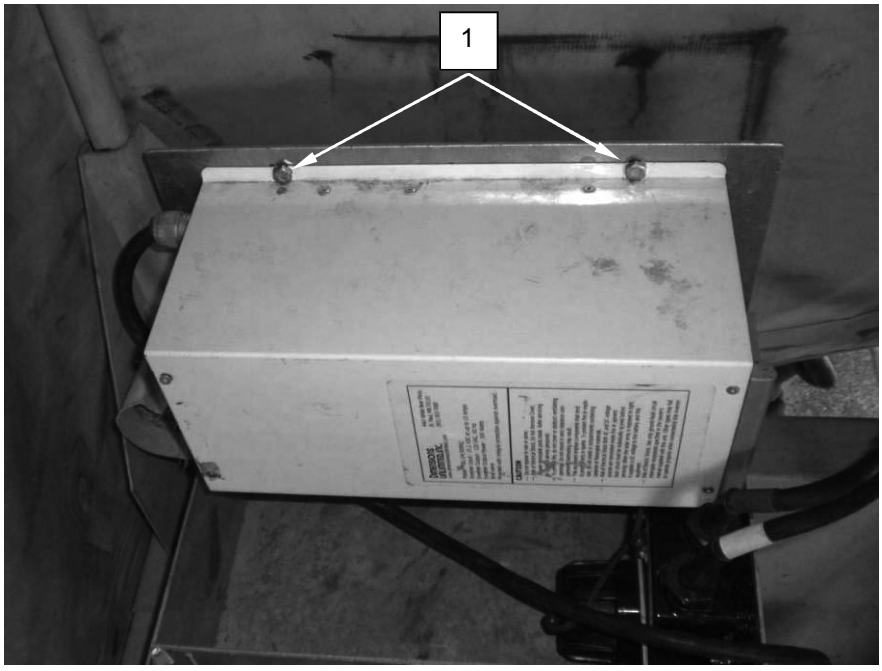


Figure 38. Securing Inverter Assembly.

INSTALLATION INSTRUCTIONS – CONTINUED

i. Secure the power cord to D-ring A (Figure 39, Item 3), located at the front of LTT, with carabiner snap hook (Figure 39, Item 2).

CAUTION

Ensure sufficient slack exists between LTT and HMMWV, to allow for freedom of movement. Failure to adhere to this caution may cause damage to the NATO adapter cable.

j. Secure the power cord with carabiner snap hook to the D-Ring at the center of the HMMWV tailgate (Figure 39, Item 1).

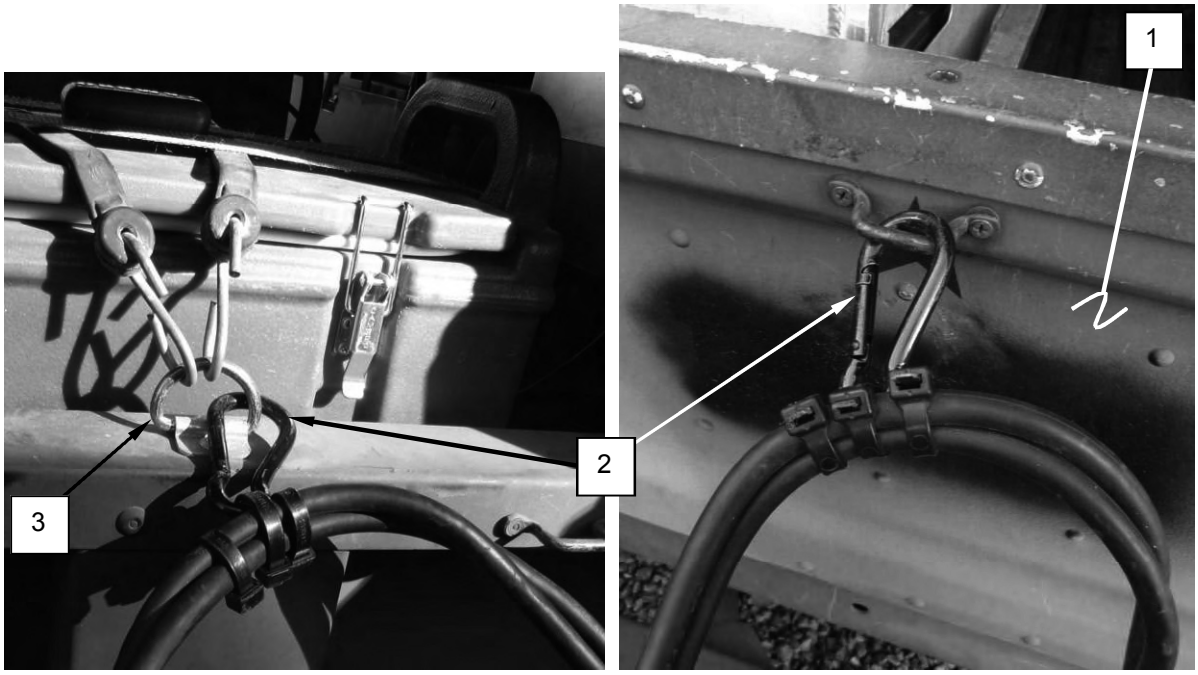


Figure 39. Securing Power Cord to LTT D-Ring and Tailgate.

INSTALLATION INSTRUCTIONS – CONTINUED

k. Locate the storage well cover (Figure 40, Item 3) behind the passenger seat in the HMMWV cargo area. Remove the cover by turning the two, quarter-turn fasteners on the storage well cover.

l. Attach NATO extension adapter (Figure 40, Item 1) to outlet (Figure 40, Item 2) in storage well by aligning posts and screwing collar onto outlet threads.

m. Replace storage well cover.

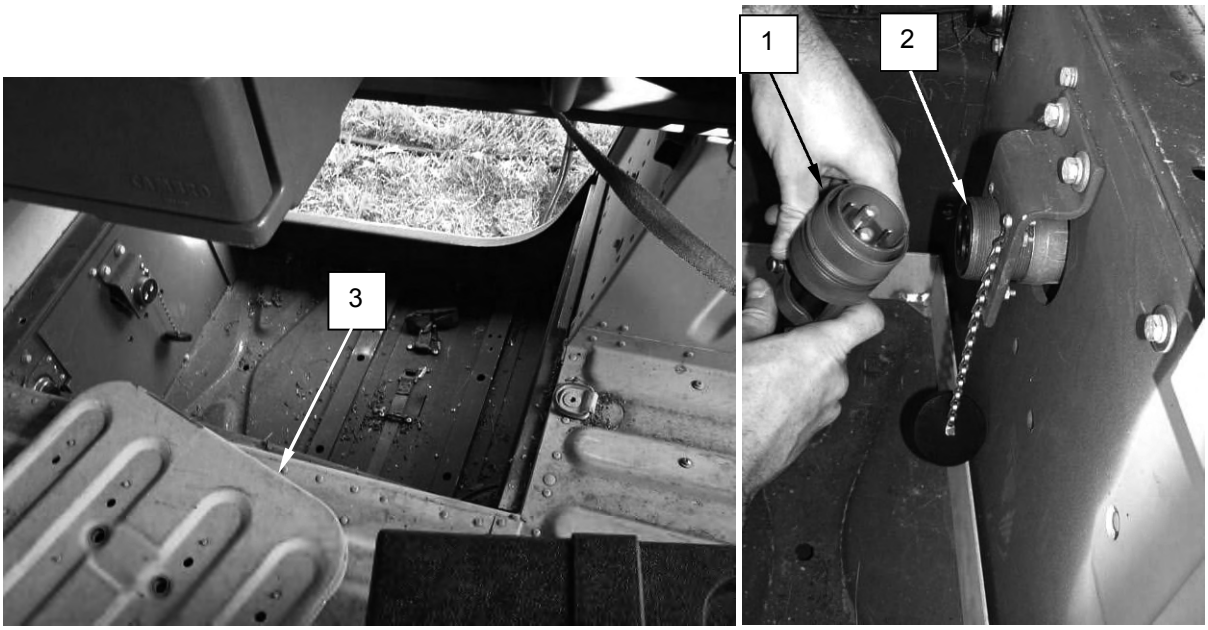


Figure 40. NATO Extension Adapter Connection.

END OF TASK

INSTALLATION INSTRUCTIONS – CONTINUED

Alternate Inverter Installation

1. Hang the inverter (Figure 41, Item 4) on the divider (Figure 41, Item 2) between the driver seat (Figure 41, Item 3) and passenger seat (Figure 41, Item 1).

Figure 41. Hang Inverter on Wall Between Seats.

INSTALLATION INSTRUCTIONS – CONTINUED

2. Pass a 5-foot cargo strap (Figure 42, Item 3) around the back and beneath the divider (Figure 42, Item 2).

3. Route the cargo strap over the top of the divider and inverter (Figure 42, Item 4). Using the ratchet (Figure 42, Item 1), tighten the strap on top of the inverter.

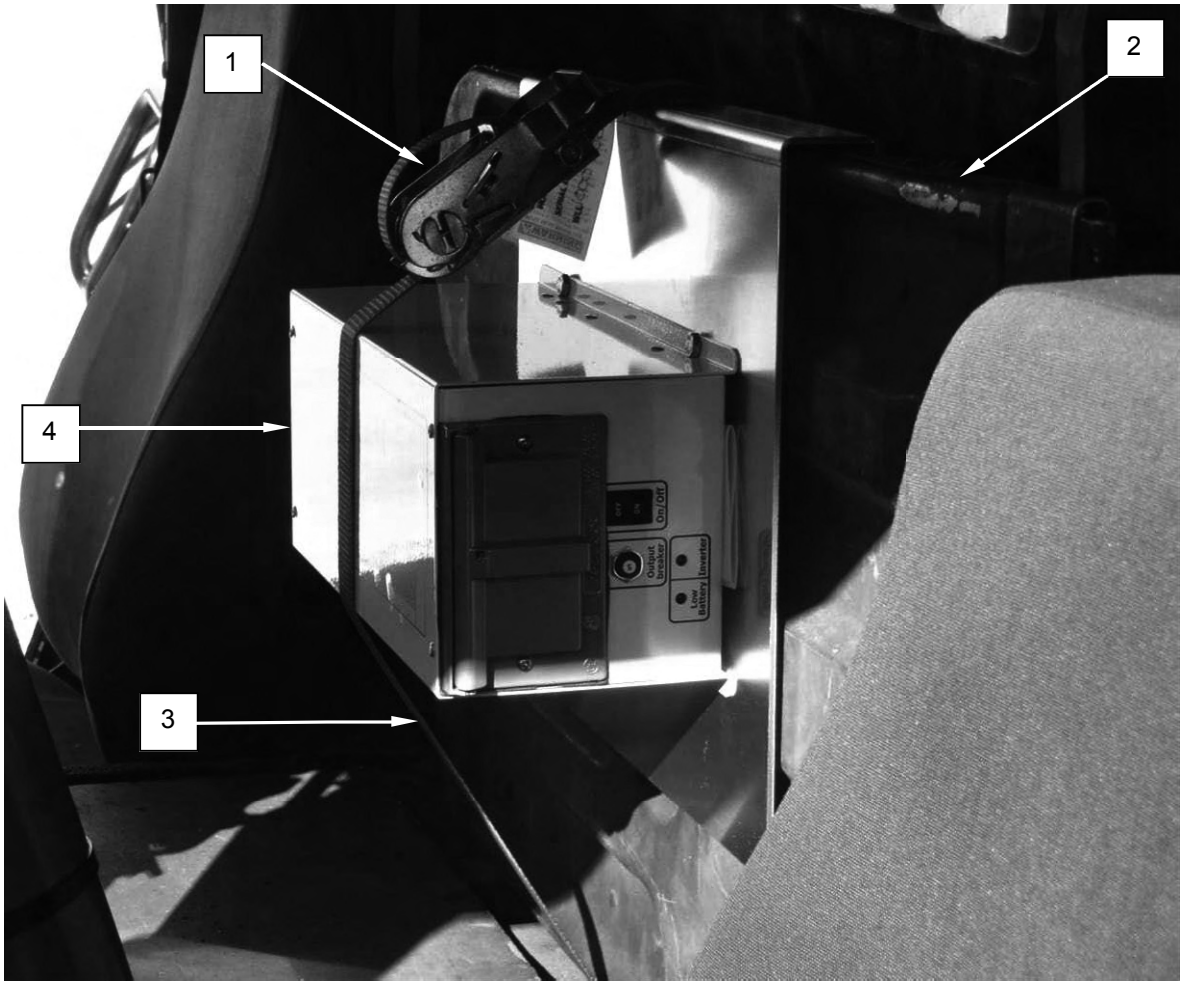


Figure 42. Secure Inverter to Wall Between Seats.

INSTALLATION INSTRUCTIONS – CONTINUED

4. Route the 24 VDC power cord (Figure 43, Item 1) of the inverter along the inside of the passenger seat to the 24 VDC NATO receptacle (Figure 43, Item 2) located underneath the passenger seat.

5. Press power cord into the NATO receptacle.

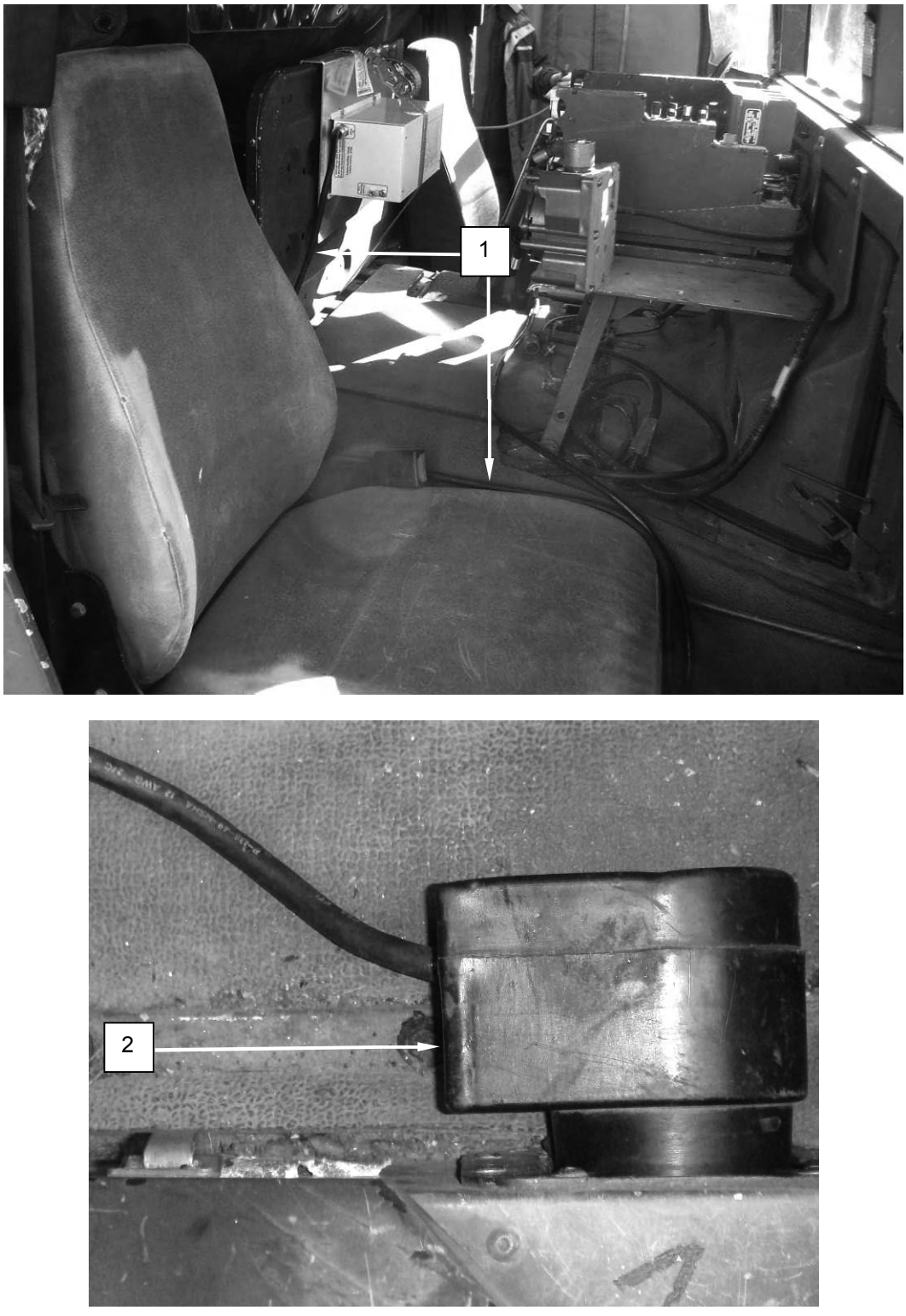


Figure 43. Connect 24 VDC Power Cord to NATO Receptacle Under Passenger Seat.

INSTALLATION INSTRUCTIONS – CONTINUED

6. Connect the extension cord (Figure 44, Item 1) to inverter.

7. Route the free end of the extension cord behind the driver seat (Figure 44, Item 2) into the cargo area of the HMMWV.

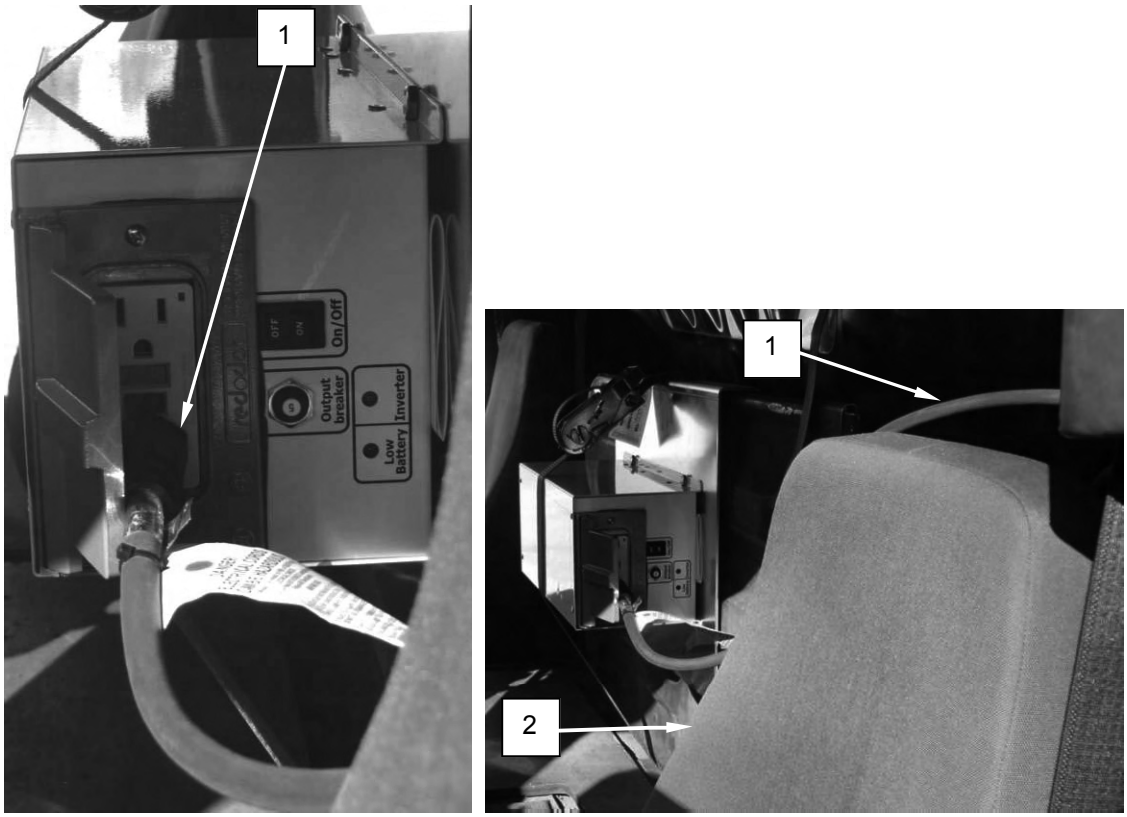


Figure 44. Connect Extension Cord to Inverter and Pass Cord into Cargo Area.

INSTALLATION INSTRUCTIONS – CONTINUED

CAUTION

Ensure sufficient slack exists between LTT and HMMWV, to allow for freedom of movement. Failure to adhere to this caution may cause damage to the NATO extension.

8. Pass the free end of the extension cord (Figure 45, Item 1) through the cargo area and into the LTT.

Figure 45. Pass Extension Cord from HMMWV Into Trailer.

INSTALLATION INSTRUCTIONS – CONTINUED

9. Starting from the free end of the extension cord, secure extension cord using the attached carabiner (Figure 46, Item 1) to the middle hook (Figure 46, Item 4) on the tailgate of the HMMWV (Figure 46, Item 6).

10. Secure extension cord using the attached carabiner (Figure 46, Item 5) to the D ring (Figure 46, Item 2) on the front wall of LTT (Figure 46, Item 3).

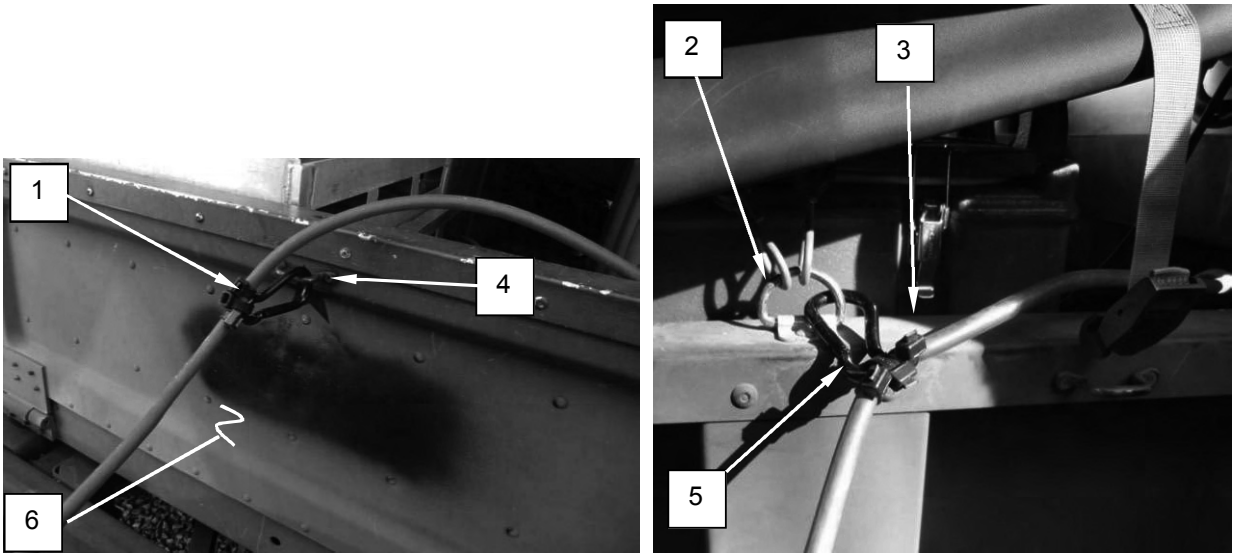


Figure 46. Secure Extension Cord.

END OF TASK

INSTALLATION INSTRUCTIONS – CONTINUED

Maintenance Kit Installation

1. Install the maintenance kit in the second compartment of the LTT driver side storage rack as follows:

   a. Pass a 14-foot cargo strap through the front opening (Figure 47, Item 1), and then the rear opening (Figure 47, Item 3) of the driver side storage rack compartment (Figure 47, Item 2) next to the inverter.

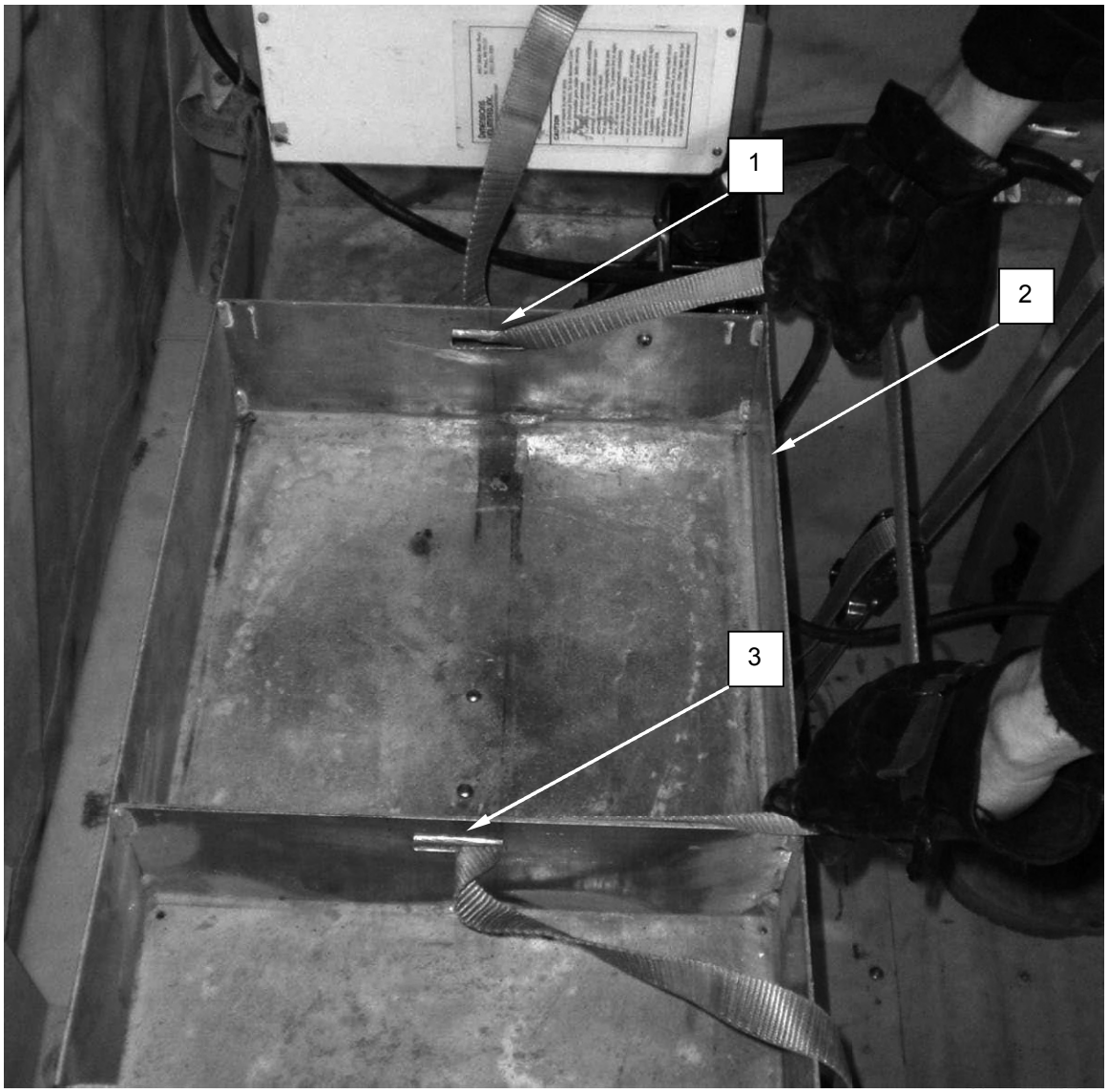


Figure 47. Maintenance Kit Placement.

INSTALLATION INSTRUCTIONS – CONTINUED

b. Position cargo strap out of the way so that placement of maintenance kit can be performed without interference.

c. Place the maintenance kit (Figure 48, Item 2) in the driver side storage rack compartment next to the inverter.

d. Place the cargo strap (Figure 48, Item 1) above the maintenance kit and ratchet on top of the kit.

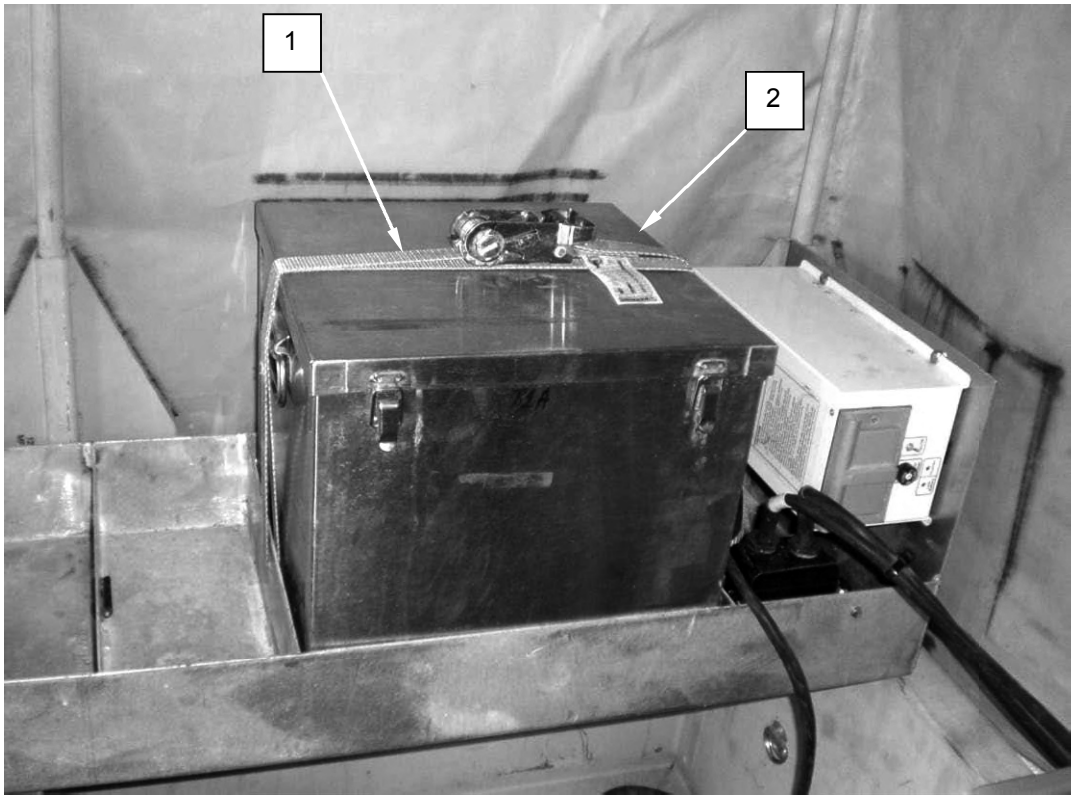


Figure 48. Maintenance Kit Tie Down.

END OF TASK

INSTALLATION INSTRUCTIONS – CONTINUED

Fuel Can Installation

1. Install fuel can adapter as follows:

   a. Unscrew and remove fuel can cap (Figure 49, Item 1).

   b. Push plastic dip tube (Figure 49, Item 2) into underside of fuel adapter cap (Figure 49, Item 3) until held in place.

   c. Thread fuel can adapter onto fuel can and hand tighten.

   d. Connect fuel line (Figure 49, Item 5) to fuel can adapter by pulling back on connector (Figure 49, Item 6) and threading onto fuel line. Ensure fuel flow arrow on fuel filter (Figure 49, Item 4) points in proper direction. Filter should be closer to the fuel can than to the Tray Ration Heater (TRH).

   e. Rotate and push connector until it clicks into place.

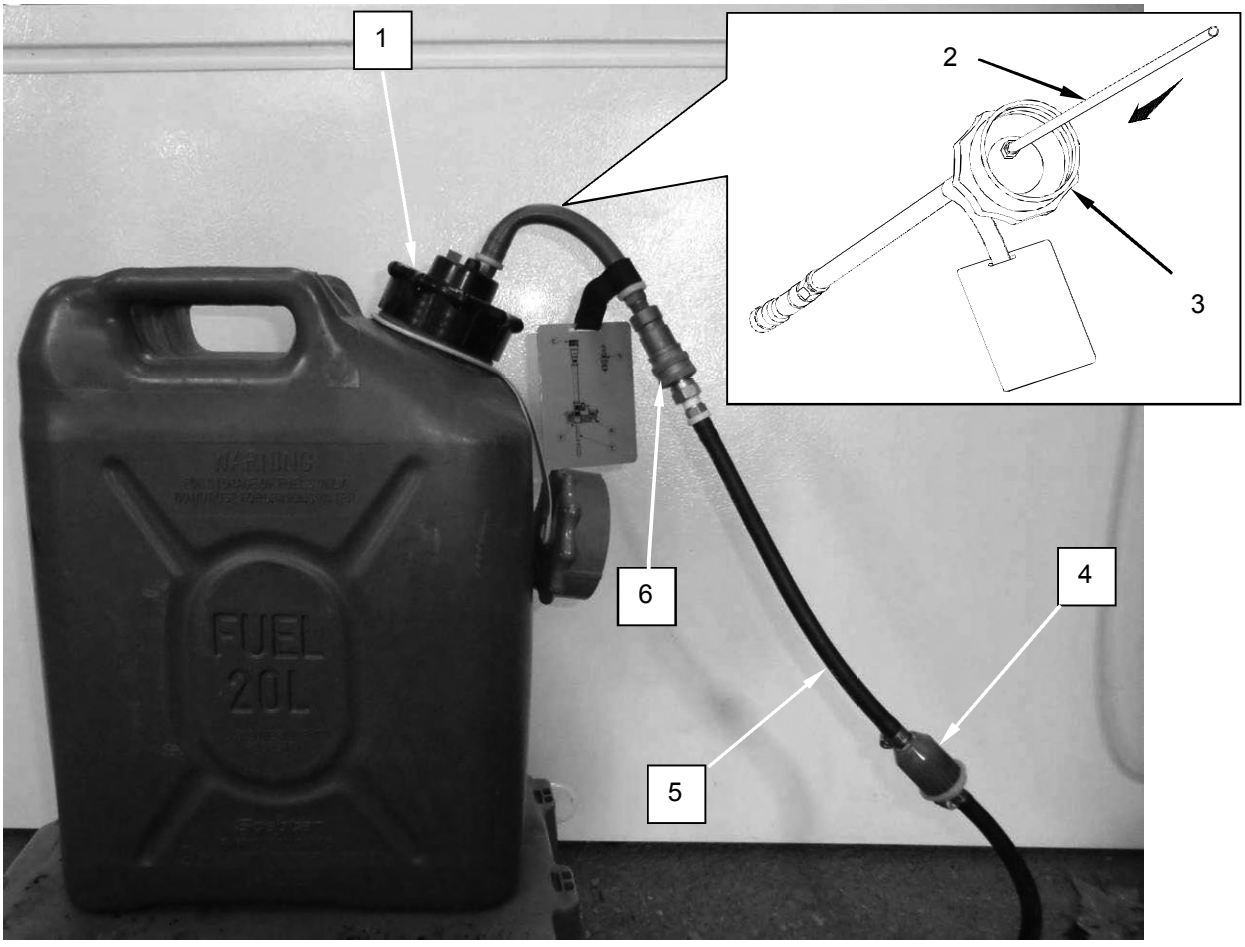


Figure 49. Fuel Can Adapter for Installation.

INSTALLATION INSTRUCTIONS – CONTINUED

2. Install the fuel can in the fourth compartment of the LTT driver side storage rack as follows:

    a. With the fuel can balanced on the storage rack compartment, but not yet seated inside the compartment, pass a 14-foot cargo strap through the front facing slot (Figure 50, Item 1) of the storage rack compartment, through the handle of the fuel can, and then the rear facing slot of the storage rack compartment. Adjust slack in strap so ratchet end of strap is accessible.

    b. Fit the fuel can into the storage rack compartment with the cap facing in (Figure 50, Item 2).

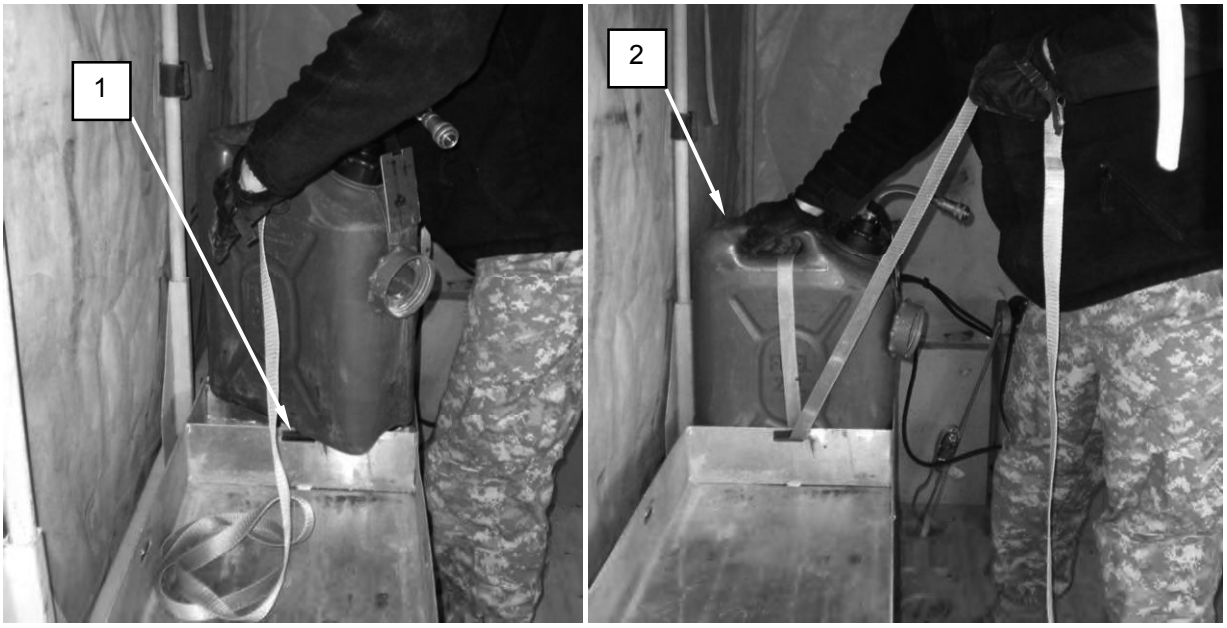


Figure 50. Fuel Can Cargo Strap Placement.

INSTALLATION INSTRUCTIONS – CONTINUED

c. Pass the cargo strap back through the fuel can handles and ratchet (Figure 51, Item 1) on the side of the fuel can.

d. Coil fuel hose and place in third compartment (Figure 51, Item 2) between fuel can and maintenance kit (Figure 51, Item 3).

Figure 51. Fuel Can Ratchet Placement.

END OF TASK

INSTALLATION INSTRUCTIONS – CONTINUED

Folding Table Installation

1. Install the folding tables in the rearmost compartment of the LTT driver side storage rack as follows:

   a. Using two 14-foot cargo straps, place the ratchets between the cargo canopy and the canopy support posts to keep them out of the way (Figure 52, Item 1).

   b. Route loose ends of the cargo straps through the outside slots of the driver side storage rack (Figure 52, Item 2).

Figure 52. Folding Table Cargo Strap Placement.

INSTALLATION INSTRUCTIONS – CONTINUED

c. Place the three folding tables in the rearmost compartment of the LTT driver side storage rack with the first two table tops facing in (Figure 53, Item 2) and the last table top facing out (Figure 53, Item 1).

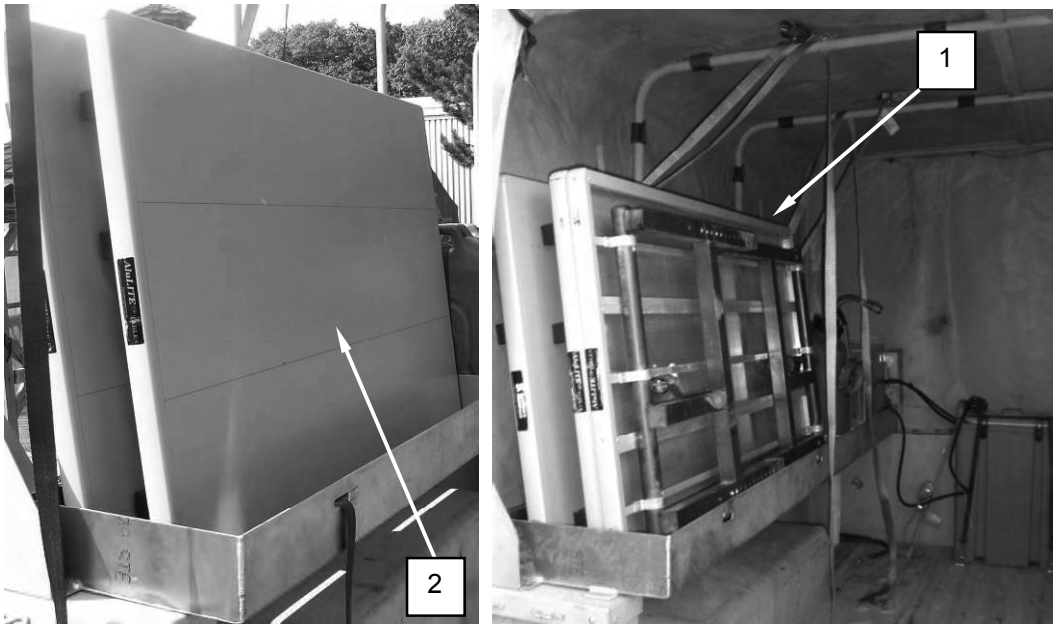


Figure 53. Folding Table Placement.

d. Bring loose end of cargo strap around the folding tables, pass through front slots (Figure 54, Item 1) of the driver side storage rack, and ratchet on the inner side of the folding tables (Figure 54, Item 2).

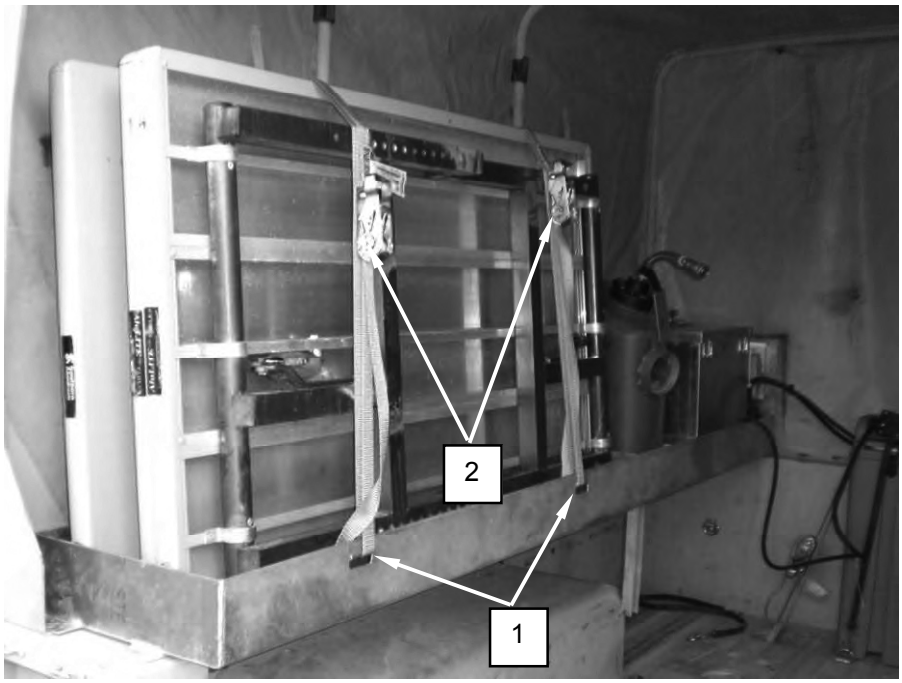


Figure 54. Securing Folding Tables with Cargo Strap.

INSTALLATION INSTRUCTIONS – CONTINUED

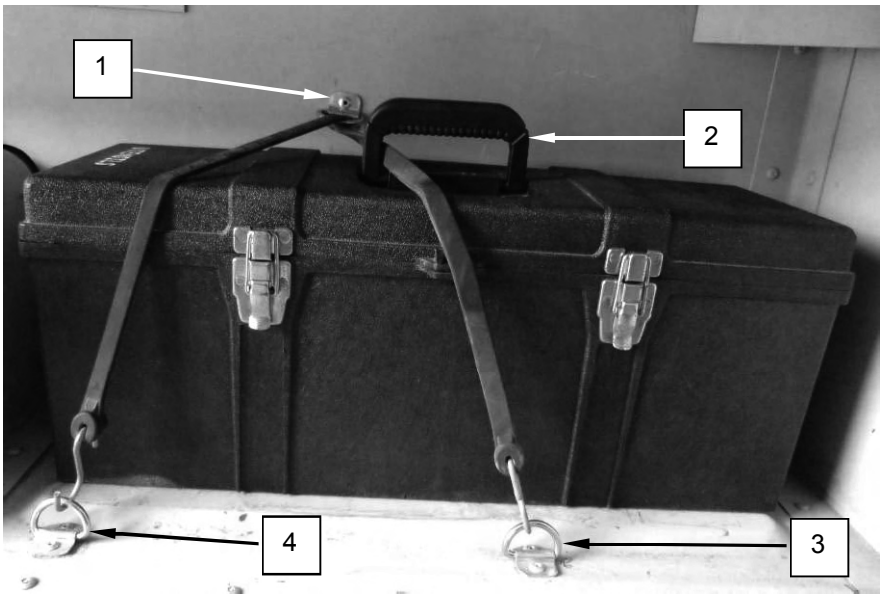
Utensil Kit Installation

1. Install the utensil box in the LTT as follows:

   a. Place the utensil box in the front driver side corner of the LTT floor and connect one end of a elastic cord from D-ring K (Figure 55, Item 4) through D-ring J (Figure 55, Item 1) on the LTT side wall.

   b. Pass the elastic cord through the utensil box handle (Figure 55, Item 2).

   c. Connect the remaining end of the elastic cord to the other D-ring G (Figure 55, Item 3).



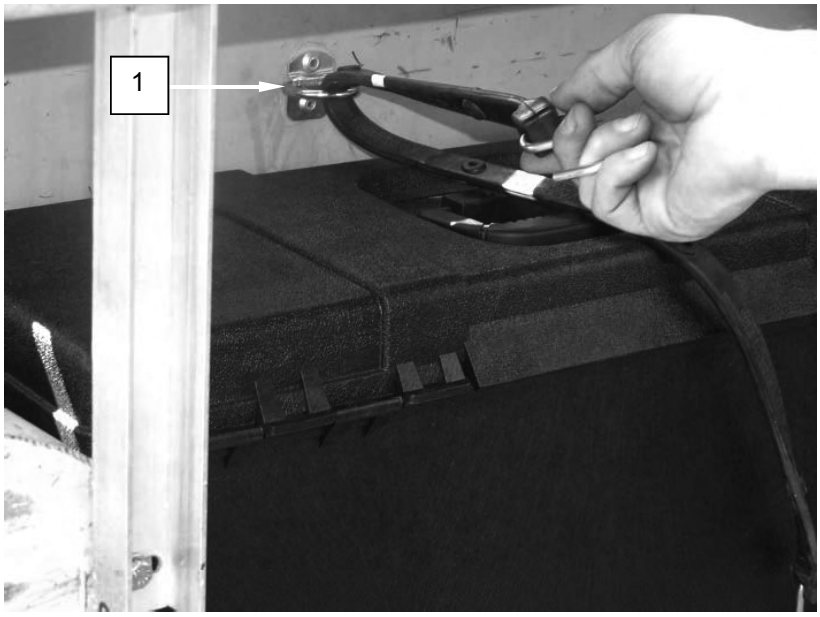


Figure 55. Securing Utensil Box.

END OF TASK

INSTALLATION INSTRUCTIONS – CONTINUED

Fire Extinguisher Installation

1. Install the fire extinguisher in the LTT as follows:

   a. Remove the four bolts, eight washers, and four lock nuts from the fire extinguisher bracket (Figure 56).

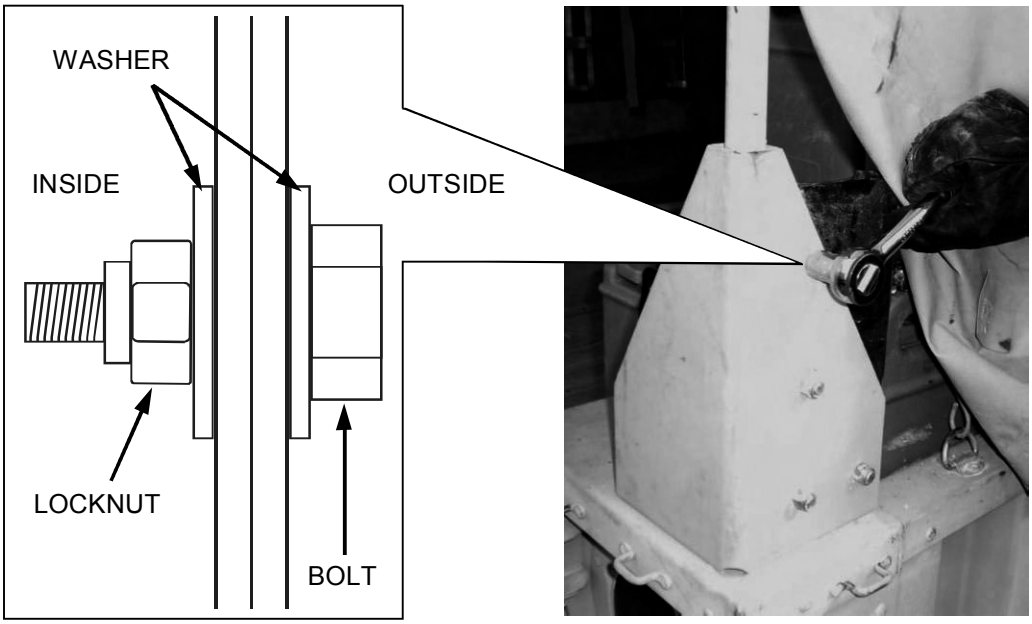


Figure 56. Fire Extinguisher Bracket Placement.

   b. Align the fire extinguisher bracket to the canopy support post.

   c. Using four bolts, washers, and locknuts, secure the fire extinguisher bracket to the inside of the canopy support post (Figure 57, Item 2). Tighten nuts securely.

   d. Secure the fire extinguisher to the fire extinguisher bracket using the retaining clamp (Figure 57, Item 1).

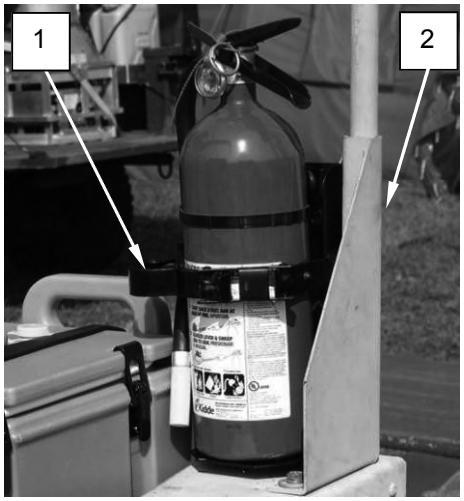


Figure 57. Securing the Fire Extinguisher.

END OF TASK

INSTALLATION INSTRUCTIONS – CONTINUED

Tray Ration Heater (TRH) Installation

1. Place TRH in LTT as follows:

WARNING

Ensure the TRH is empty before installing on a HMMWV or LTT. The TRH is extremely heavy when full and may cause injury to personnel who attempt to move the TRH while it is full. Use a forklift to move TRH.

When loading the TRH, ensure the end with the burner is not raised above the opposite end that contains the exhaust vent and drain vent. Fuel may spill into flame tube and create a fire hazard. Failure to observe this warning may result in injury or death.

CAUTION

Ensure TRH is on a wooden pallet or other support before attempting to lift with material handling equipment. Failure to observe caution may result in damage to the TRH tank or skids.

To secure the TRH in a vehicle, it is necessary to use cargo straps wrapped around the TRH skids. Do not over tighten the cargo strap ratchets to the point they bend the TRH skids.

a. Place TRH on wooden pallet or other support and lift with forklift (Figure 58, Item 1).

b. Slide TRH onto LTT cargo bed with exhaust vent and drain vent side (Figure 58, Item 5) facing rear of LTT. Install TRH between D-ring 11 (Figure 58, Item 4) and D-ring Q (Figure 58, Item 2). Ensure that the skids of the TRH slide between the ridges (Figure 58, Item 3) of the corrugated LTT floor. The skids are designed to fit between two ridges at the same time. Ensure LTT tail gate closes without interference from the TRH tank drain valve.

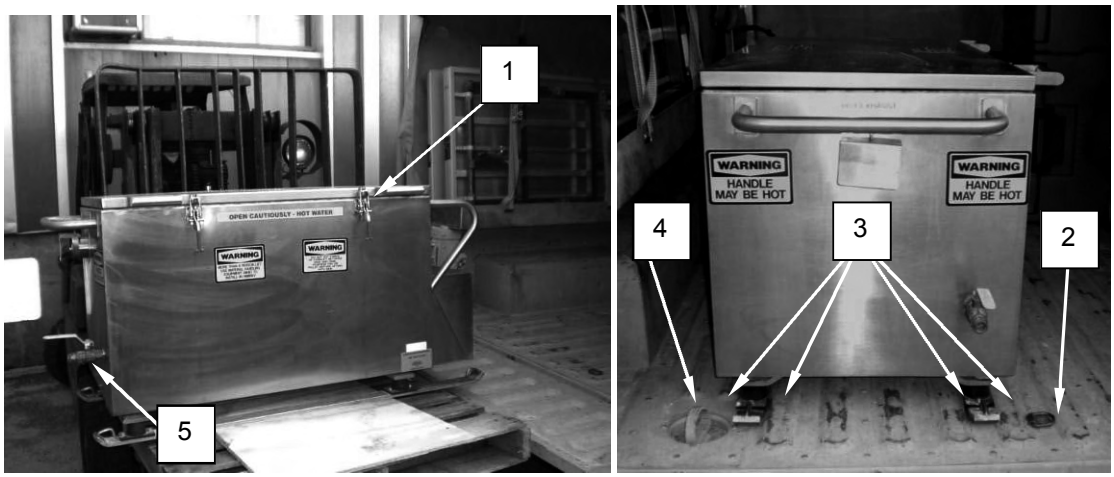


Figure 58. Loading the TRH on LTT Bed.

INSTALLATION INSTRUCTIONS – CONTINUED

CAUTION

To ensure TRH is properly secured, make sure straps lay flat and are not twisted or tangled.

NOTE

Refer to figure 10 in this WP for D-ring identifications.

2. Install burner-side cargo strap as follows:

   a. Lay a 5-foot cargo strap on LTT bed, at burner side of TRH. Ensure ratchet (Figure 59, Item 7) is in front of heater (Figure 59, Item 1) between skids, and strap (Figure 59, Item 6) extends out towards driver side of LTT.

   b. Pass cargo strap through skid ring (Figure 59, Item 2) on driver side.

   c. Pass cargo strap over and through D-ring M (Figure 59, Item 3).

   d. Pass strap back through skid ring on driver side, and then back through skid ring on passenger side (Figure 59, Item 5).

   e. Pass cargo strap under and through D-ring N (Figure 59, Item 4) and passenger side skid ring.

   f. Pass cargo strap through ratchet, but do not tighten ratchet at this time.

INSTALLATION INSTRUCTIONS – CONTINUED

NOTE

View from front of LTT, looking toward rear of LTT.

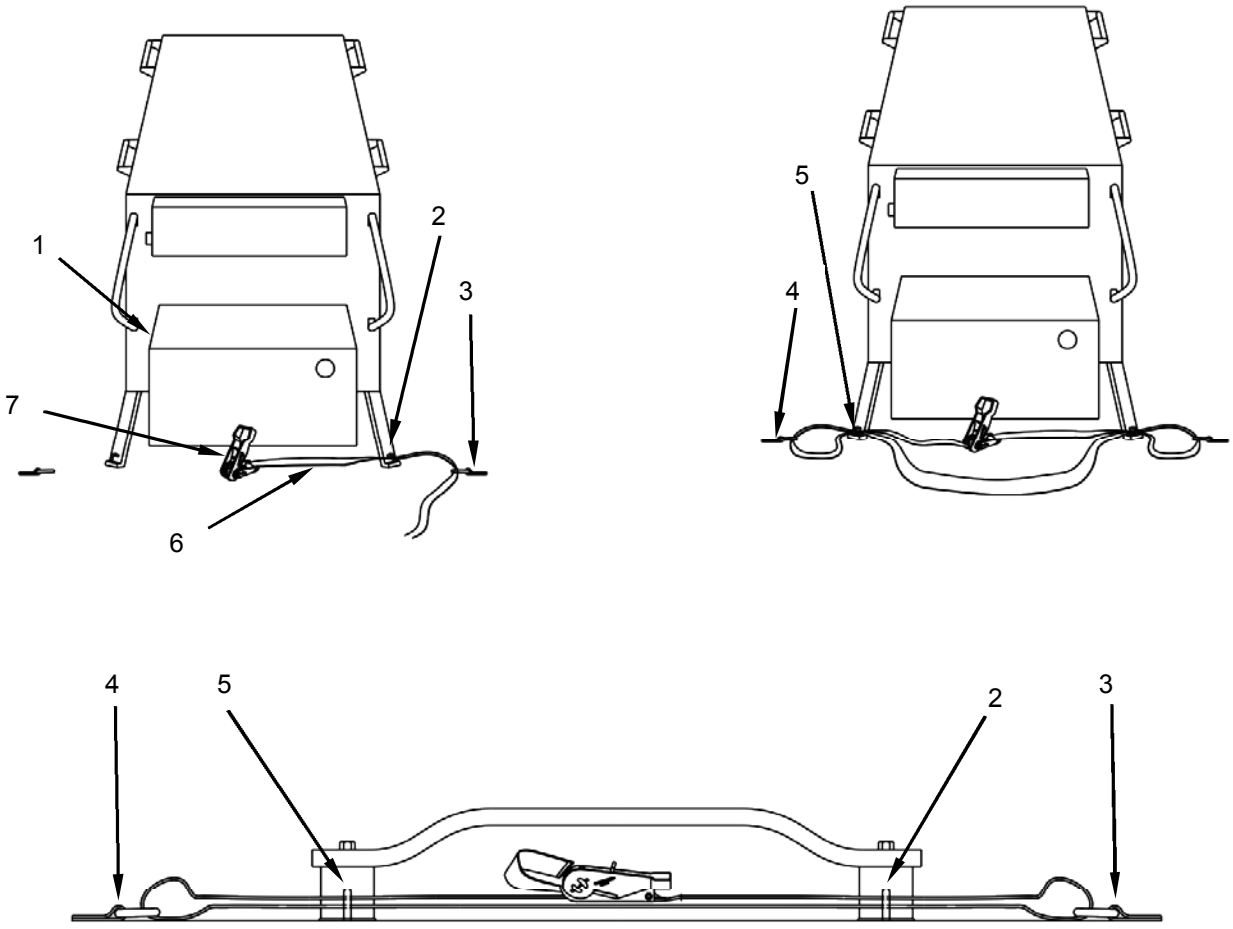


Figure 59. TRH Burner-side Cargo Strap Path.

INSTALLATION INSTRUCTIONS – CONTINUED

CAUTION

To ensure item is properly secured, make sure straps lay flat and are not twisted or tangled at all times.

3. Install exhaust-side cargo strap as follows:

   a. Lay a 5-foot cargo strap on LTT bed with ratchet (Figure 60, Item 6) between skids. Run strap to passenger side of LTT.

   b. Pass strap through TRH skid ring (Figure 60, Item 5) on passenger side.

   c. Pass strap under and through D-ring Q (Figure 60, Item 3).

   d. Pass strap over front edge of skid mount bracket to the rear of the bracket and underneath the TRH (Figure 59, Item 2) to driver side of skid mount bracket.

CAUTION

Drape cargo strap over facing edge of skid mounting bracket. Do not drape cargo strap over ends of skid mounting bracket. This can cause wear and eventually damage cargo strap.

   e. Pass strap back over the front edge of driver side skid mount (Figure 60, Item 1) and pass over and through D-ring 11 (Figure 60, Item 8).

   f. Pass strap back through driver side skid ring (Figure 60, Item 7) through ratchet. Pull slack tight and ratchet three times. Do not fully tighten.

   g. Lay another 5-foot cargo strap (Figure 60, Item 4) on the LTT bed with ratchet between skids of TRH. Run strap to passenger side of LTT.

   h. Pass cargo strap through TRH skid ring (Figure 60, Item 5) on passenger side.

   i. Pass cargo strap over and through D-ring Q (Figure 60, Item 3).

   j. Run free end of strap under itself and pass strap back through passenger skid ring (Figure 60, Item 5) then driver side skid ring (Figure 60, Item 7).

   k. Pass strap under and through D-ring 11 (Figure 60, Item 8) and back through driver side skid ring (Figure 60, Item 7). Pass strap through ratchet.

INSTALLATION INSTRUCTIONS – CONTINUED

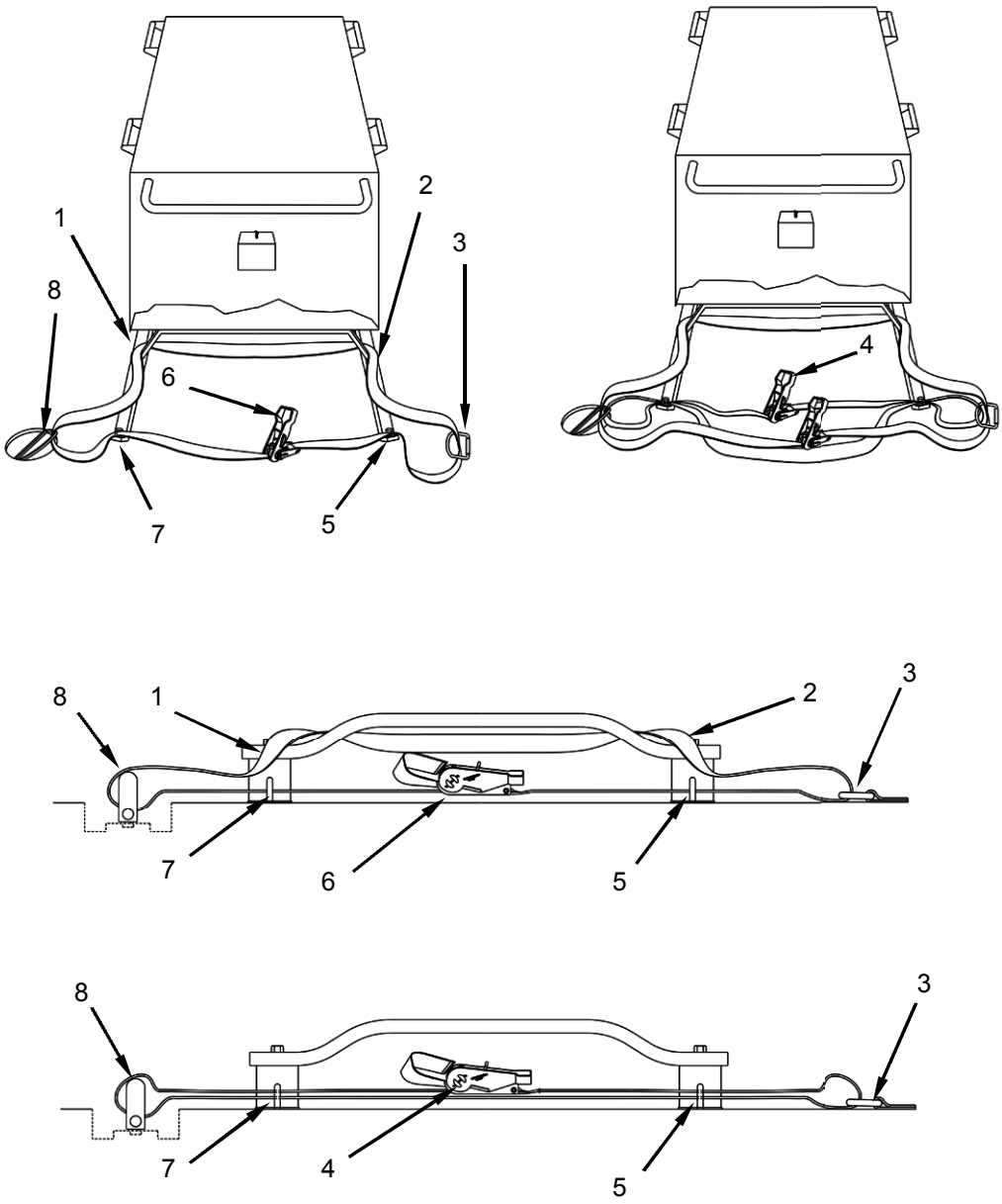


Figure 60. TRH Drain-side Cargo Strap Path.

INSTALLATION INSTRUCTIONS – CONTINUED

4. Ensure LTT tailgate is able to close without interference from the TRH drain valve. Move TRH over D-rings if necessary.

CAUTION

Do not over tighten the cargo strap ratchets because this may bend the TRH skids.

5. Ratchet all cargo straps snug

6. Orient exhaust deflector (Figure 61, Item 1) downward.

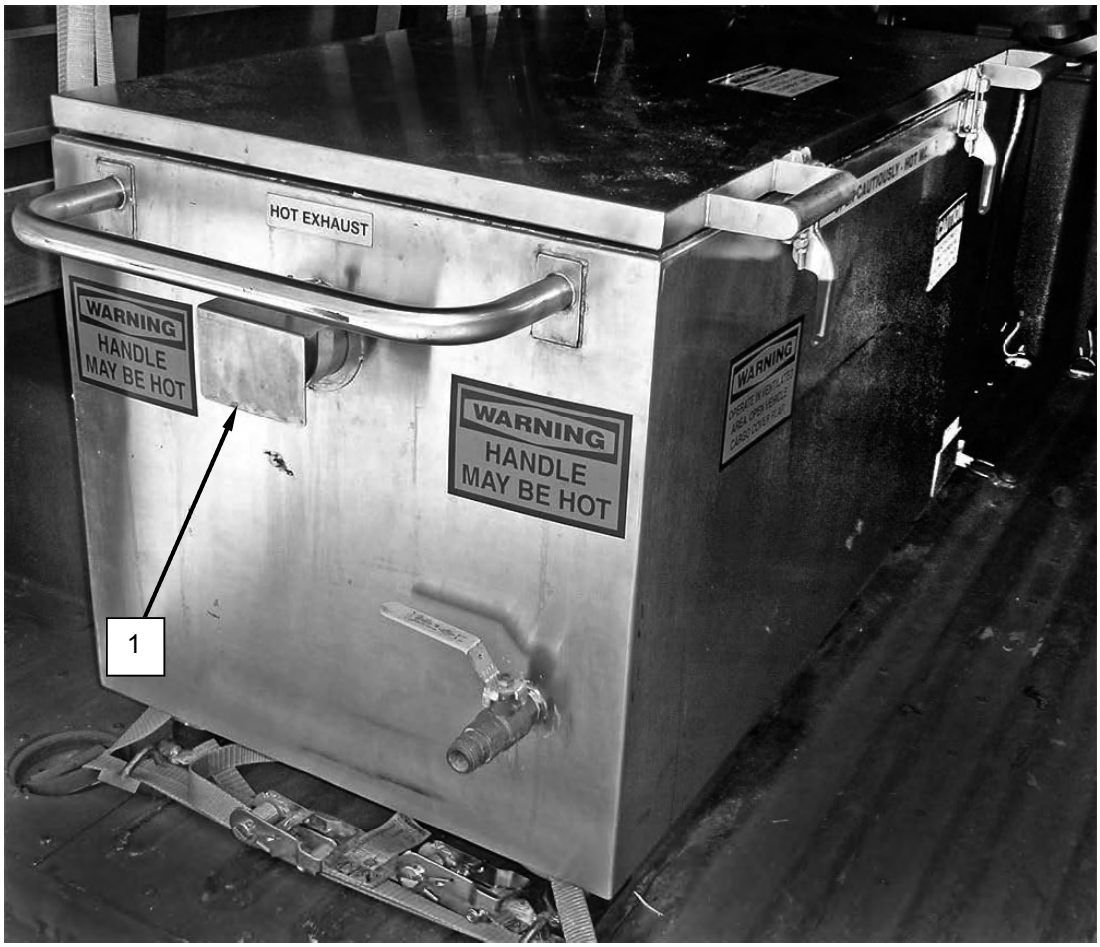


Figure 61. Orient Exhaust Deflector Shield Downward.

INSTALLATION INSTRUCTIONS – CONTINUED

7. Install Tray Ration Heater fuel line and power cord as follows:

   a. Connect TRH fuel line to fuel input (Figure 62, Item 2) by pulling back connector and rotating connector until a click is heard.

   b. Connect power line to TRH power input (Figure 62, Item 1).

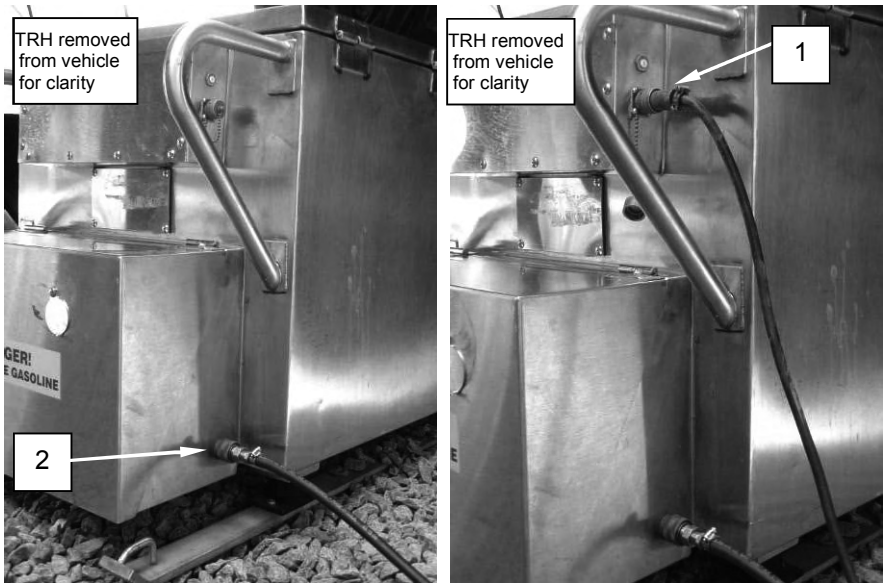


Figure 62. TRH Fuel and Power Connections.

   c. Connect opposite end of power cord to inverter outlet (Figure 63, Item 1) or extension power cord (Figure 63, Item 2) depending on whether the Alternate Inverter installation or Preferred Inverter installation is used.

Figure 63. TRH Inverter Power Connection.

INSTALLATION INSTRUCTIONS – CONTINUED

Tool Kit Installation

1. Place AK Tool Box under passenger side storage rack as follows:

   a. Place AK Tool Box over D-ring 10, between D-ring 8 (Figure 64, Item 3) and D-ring 12 (Figure 64, Item 2).

   b. Connect one elastic cord (Figure 64, Item 1) to D-ring 8, through toolbox handle and back to D-ring 8.

   c. Connect one elastic cord to D-ring 12, through handle and back to D-ring 12.

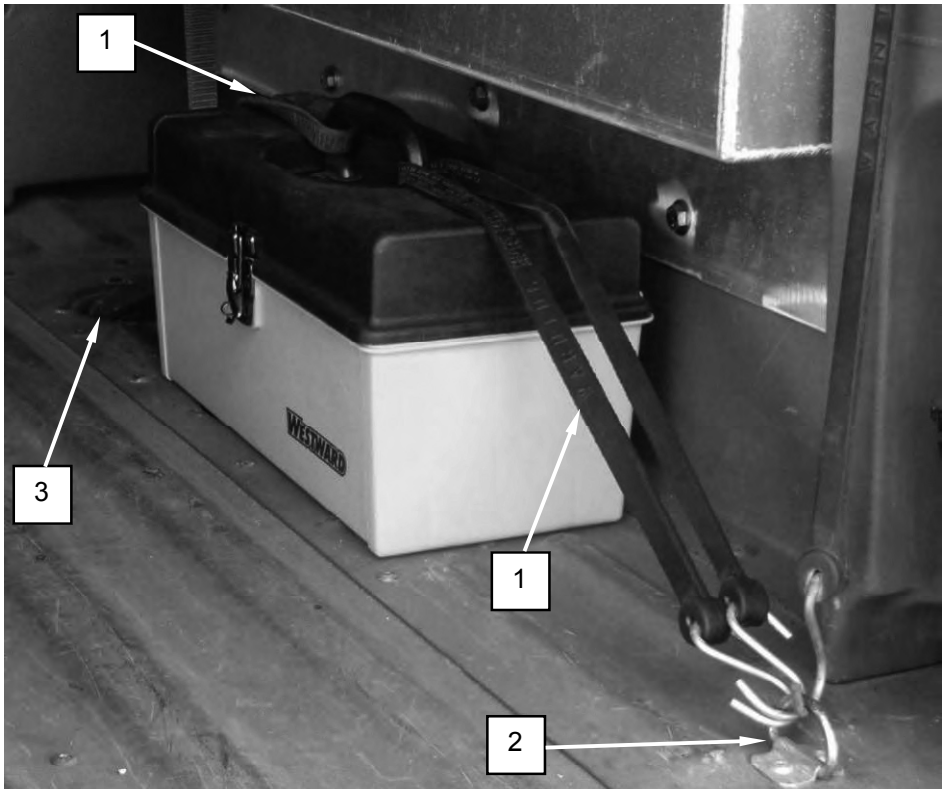


Figure 64. AK Tool Box Placement.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE

SERVICE UPON RECEIPT
STATIC CONFIGURATION

INITIAL SETUP:

Tools and Special Tools

Maintenance Kit (WP 0069, Item 1)
AK Tool Box (WP 0069, Item 3)

Materials/Parts

Electrical Component Tiedown Straps
(WP 0069, Item 17)

Personnel Required

Food Service Specialist 92G (2)
Licensed Forklift Operator – Non-MOS Specific (1)
Non-Specific MOS (1)

References

DA PAM 750-8
DD 361
TM 10-7310-281-13&P
WP 0002, 0006, 0068, 0069

SERVICE UPON RECEIPT OF MATERIAL

Unpacking

The components of the AK are packed in the HMMWV and the Lightweight Tactical Trailer (LTT). Unpack the AK components, remove and discard all packing material. Unpacking will require a minimum of two personnel for one hour for a total man-hour requirement of two hours.

Checking Unpacked Equipment

Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on DD 361, Transportation Discrepancy Report. Check the equipment against the packing slip or hand receipt to see if the shipment is complete. Report all discrepancies in accordance with DA PAM 750-8. Check to see whether the equipment has been modified. Inventory MBU components IAW WP 0002, WP 0066, and WP 0067.

END OF TASK

INSTALLATION INSTRUCTIONS

WARNING

During operation, the TRH and MBU produce harmful carbon monoxide (CO) and other gases. Carbon monoxide is a colorless, odorless, and tasteless gas. Mild cases of carbon monoxide poisoning can cause symptoms such as nausea, dizziness or headaches. Severe cases of carbon monoxide poisoning can result in brain damage, heart damage or death. Remember that although CO has no odor, it may mix with other odors that mask its presence; therefore, CO can be present within a mix of seemingly harmless odors. To prevent CO poisoning, ensure that the TRH and MBU operating spaces are well ventilated during burner operation. Under no circumstances, should the TRH be operated in any enclosure with all vents closed.

INSTALLATION INSTRUCTIONS – CONTINUED

Static configuration instructions are used when the unit using the AK will be in place in remote locations for an extended period of time. The static configuration allows the unit to remove the AK from the HMMWV and trailer and employ the AK and serving line while sheltered. The AK can be installed in a variety of shelter types including tents, buildings, or temporary shelters.

Shelter Requirements

The main considerations for which building type to use are adequate area and proper ventilation. The AK components and serving line must fit in the sheltered area and the combustion exhaust must be vented outdoors for safe operation of all multi fuel burning food service devices (MBU, TRH, etc.). The minimum recommended area size is approximately 16 x 20 ft (4.9 m x 6.1 m). This area may be provided by a single TEMPER Type VII, 16 x 20 Utility (NSN: 8340-01-185-2613), Modular General Purpose Tent System (MGPTS) (NSN: 8340-01-456-3628), or equivalent.

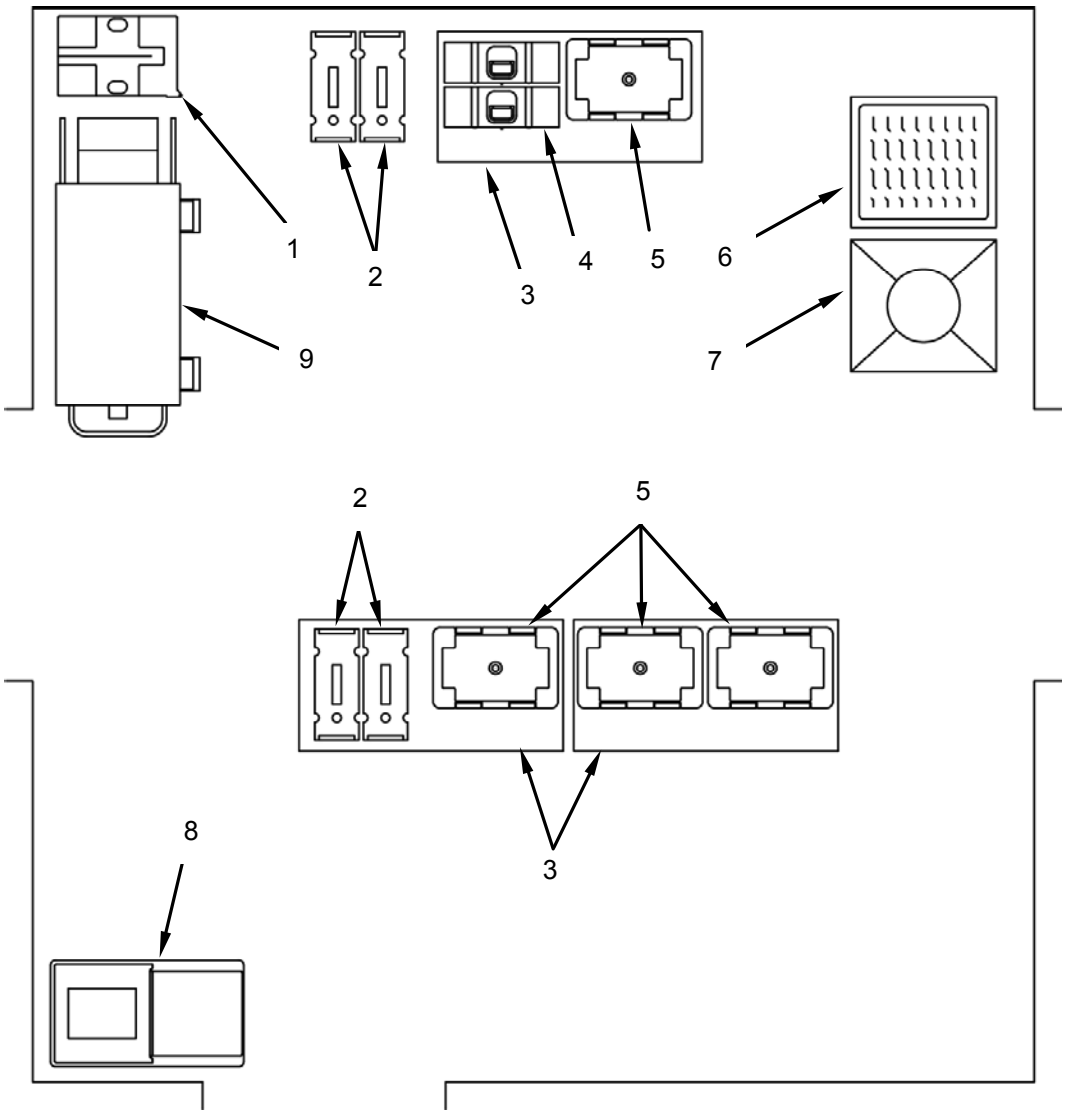
Power Requirements

Power requirements are the next consideration. The basic AK components require a vehicle with 24VDC connections, a generator, or a standard power outlet (wall outlet). Depending on the mission, the static configuration may require additional items and additional power supplies. Refer to the Additional Authorization List (AAL) in WP 0067 for any additionally authorized items needed to employ the AK in the static configuration. Refer to TM 10-7310-281-13&P, Operator and Field Maintenance Manual Including Repair Parts and Special Tools List for Modern Burner Unit (MBU) for MBU power requirements and connections. The AAL in TM 10-7310-281-13&P may also be used to procure additional items for each MBU. In addition, refer to the Common Table of Allowances (CTA) 50-909 Field and Garrison Furnishings and Equipment, for items authorized for use with your AK.

INSTALLATION INSTRUCTIONS – CONTINUED

Unloading and Positioning Equipment

Unload equipment and lay out in the shelter. The layout shown in Figure 1 is an example and will depend on the equipment being used.



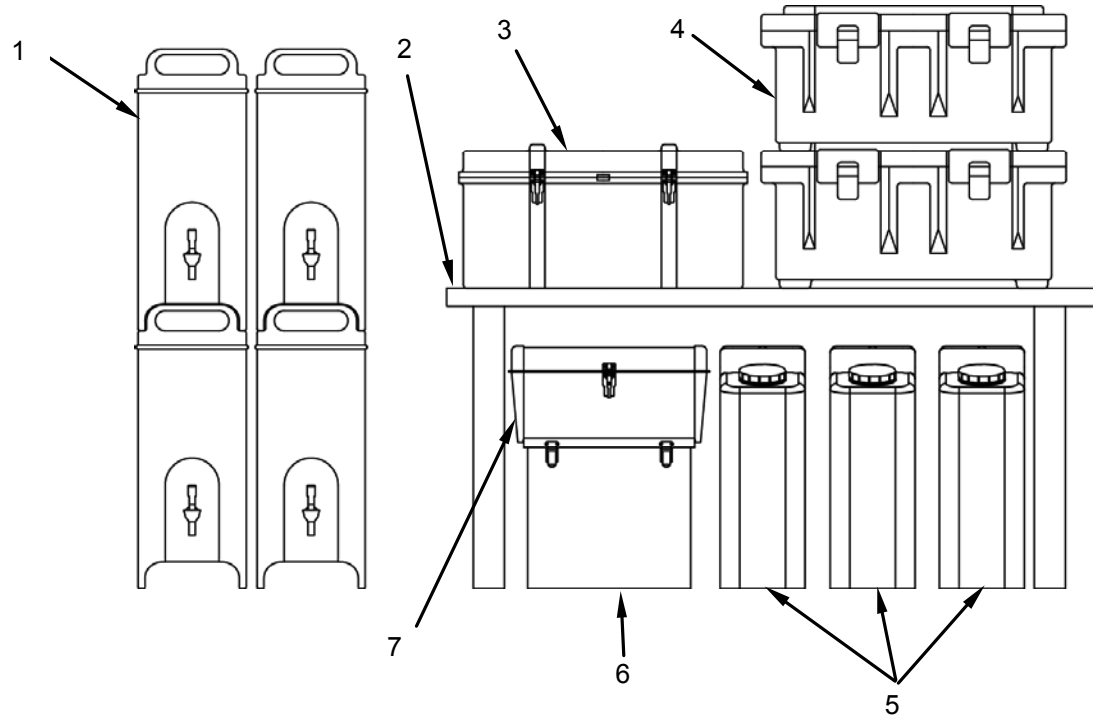
Legend

1. Side Loading Pan Carrier (SLPC)
2. Insulated Liquid Dispensers
3. Folding Tables
4. MBU Accessory and Utensil Kits
5. Insulated Food Container (IFC)
6. M59A Range
7. Cooking Pot Cradle/Griddle
8. Ice Chest
9. Tray Ration Heater (TRH)

Figure 1. Example of a Static Configuration.

INSTALLATION INSTRUCTIONS – CONTINUED

Factors to consider for setup include ventilation, work space, and serving line flow. The multi-fuel burning food service devices (MBU, TRH, etc.) must be located so that the combustion exhaust is properly vented and does not collect in the serving area. An adequate workspace for food service personnel will allow them to tend to the serving stations and food service equipment without interfering with feeding. The flow of the serving line should allow soldiers to enter the feeding area, be served rations, and exit the serving area in a quick, orderly manner. Two of the folding tables are used for the serving line, but one of the tables may be used as a work table. Figure 2 shows an example setup of a table that can accommodate the utensil kit, maintenance kit, and extra insulated containers.



Legend

1. Insulated Liquid Dispensers
2. Folding Tables
3. Utensil Box
4. Insulated Food Container (IFC)
5. Water Cans
6. Maintenance Kit
7. AK Tool Box

Figure 2. Example of a Table Layout.

Powering and Fueling Equipment

Connect power to the TRH and any MBUs being used. Refer to WP 0006, TRH Operation for proper connection of the TRH power and fuel. Refer to TM 10-7310-281-13&P for MBU related power and fuel instructions.

Refer to the AAL in WP 0067 for any items used to support the static configuration that are not supplied with the AK.

END OF TASK

END OF WORK PACKAGE

OPERATOR AND FIELD MAINTENANCE

CLEANING

INITIAL SETUP:

Materials/Parts

Brush, Scrub (WP 0069, Item 3)
Detergent, General Purpose (WP 0069, Item 6)
Pad, Scouring (WP 0069, Item 12)
Rag, Wiping (WP 0069, Item 13)

Personnel Required

Food Service Specialist 92G (2)

References

ATTP 4-41
TM 10-7360-204-13&P
TM 10-7310-281-13&P

Equipment Condition

TRH burner turned OFF
TRH tank empty

CLEANING

Food Service Equipment

The primary method in which AK components should be cleaned is using the available base area sanitation equipment (FSC, etc.) of the associated higher level kitchen support. For situations where sanitation equipment is not available, refer to ATTP 4-41 and use the following field sanitation procedures.

1. Prepare three sinks using three empty Insulated Food Carriers (IFC) and hot water from the TRH tank. Fill each IFC with hot water and set aside one IFC each for WASH, RINSE, and SANITIZE cleaning sinks.
2. Before cleaning with detergent and warm water, remove any excess dirt or food particles by scraping or scrubbing with a scrub brush or scouring pad.
3. Use a biodegradable liquid detergent that is suitable for the cleaning of food service surfaces. Follow directions outlined by detergent instructions.
4. Mix detergent IAW product instructions in the IFC set aside for washing.
5. Scrub food service equipment in the WASH sink with a clean rag, sponge, or brush to rid equipment of dirt or food particles.
6. Rinse with clean water from the RINSE sink until all detergent residues are gone.
7. Repeat steps 5 and 6 as necessary.
8. Sanitize food service equipment with hot water in the SANITIZE sink.

END OF TASK

CLEANING – CONTINUED

Tray Ration Heater (TRH)

Frequent cleaning of the TRH interior will prevent the build up of lime and scale deposits, which may interfere with the proper functioning of the low water sensor. The TRH tank water may be used multiple times for heating rations and should only be drained and cleaned when the tank water is dirty. To clean the TRH use the following procedures:

1. Clean exterior of TRH tank with warm water.
2. Clean interior of tank with a scouring pad and clean water to remove mineral deposits.
3. Thoroughly rinse interior with clean water and drain.
4. Inspect low water sensor to ensure it is not obstructed by dirt, debris, or mineral deposits.

END OF TASK

Cooking Pot Cradle Assembly

1. Clean the cooking pot cradle assembly after each use as follows:
    a. Remove the MBU from the assembly for separate cleaning.
    b. Remove cooking pots from the assembly and wash separately with detergent and warm water.
    c. Clean cooking pot cradle assembly with detergent and warm water.
    d. If any spots remain on cooking pots or cradle assembly, remove with detergent and warm water using a nylon cleaning pad.
    e. Rinse all components thoroughly with clean water and air dry.

END OF TASK

Insulated Food Carrier (IFC)

1. Clean IFCs after each use using detergent and warm water. A plastic or bristle brush may be used to remove stuck food particles.
2. Rinse thoroughly with clean water and air dry.

END OF TASK

CLEANING – CONTINUED

Insulated Beverage Dispenser (IBD)

1. Clean dispenser, lid, and gasket of IBD using a scrub brush with detergent and warm water.

NOTE

If you cannot remove a strong taste or odor from dispenser, the spout must be disassembled and cleaned thoroughly.

2. Clean faucet and spout using a thin brush with detergent and warm water.
3. Rinse thoroughly with clean water and air dry.

END OF TASK

Ice Storage Chest

1. Clean ice storage chest using a scrub brush with detergent and warm water.
2. Rinse thoroughly with clean water, and air dry.

END OF TASK

Can Opener

1. Clean can opener using a scrub brush with detergent and warm water.
2. Rinse thoroughly with clean water, and air dry.

END OF TASK

Folding Tables

CAUTION

Do not use abrasive cleaners or wire brushes to clean tables. A plastic or nylon cleaning pad may be used to assist in thoroughly cleaning tables.

1. Clean table with detergent and warm water.
2. Check for spots, corrosion, or peeling on the coating that covers the metal parts. Remove spots with detergent and warm water using a scouring pad.
3. Rinse all components thoroughly with clean water, and air dry.
4. After cleaning, check that braces, angle irons, and supports are secure.

END OF TASK

CLEANING – CONTINUED

M59A Field Range

Refer to TM 10-7360-204-13&P for Field Range cleaning and sanitation procedures.

END OF TASK

Modern Burner Unit (MBU)

Refer to TM 10-7310-281-13&P for MBU cleaning and sanitation procedures.

END OF TASK

Griddle Assembly

CAUTION

To prevent the hard anodized surface on the griddle from wearing off, you should not clean the griddle with abrasive cleaners or wire brushes. Use a scouring pad instead.

NOTE

If the hard anodized surface is worn off over 50% of the grilling surface, replace griddle.

1. Separate griddle and griddle base from burner rack.
2. Clean griddle and griddle base with detergent and warm water.
3. Rinse with clean water and air dry.
4. Check for signs of corrosion or peeling.
5. The coating over the metal of griddle base may show spots. If so, remove spots with detergent and warm water using a scouring pad.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE

**TANK ASSEMBLY,
REPAIR**

INITIAL SETUP:

Tools and Special Tools

AK Tool Box (WP 0069, Item 3)

Personnel Required

Food Service Specialist 92G

Equipment Condition

TRH turned OFF

REPAIR

Repair of the TRH Tank consists of replacing the wire rope assembly and pin lock.

Replacing the Wire Rope Assembly

1. Remove pin lock (Figure 1, Item 3) from saddle pin inside TRH Burner alignment and retaining pin.
2. Remove pin lock (Figure 1, Item 3) from wire rope assembly (Figure 1, Item 1) by sliding pin lock through wire rope assembly eyelet (Figure 1, Item 2).

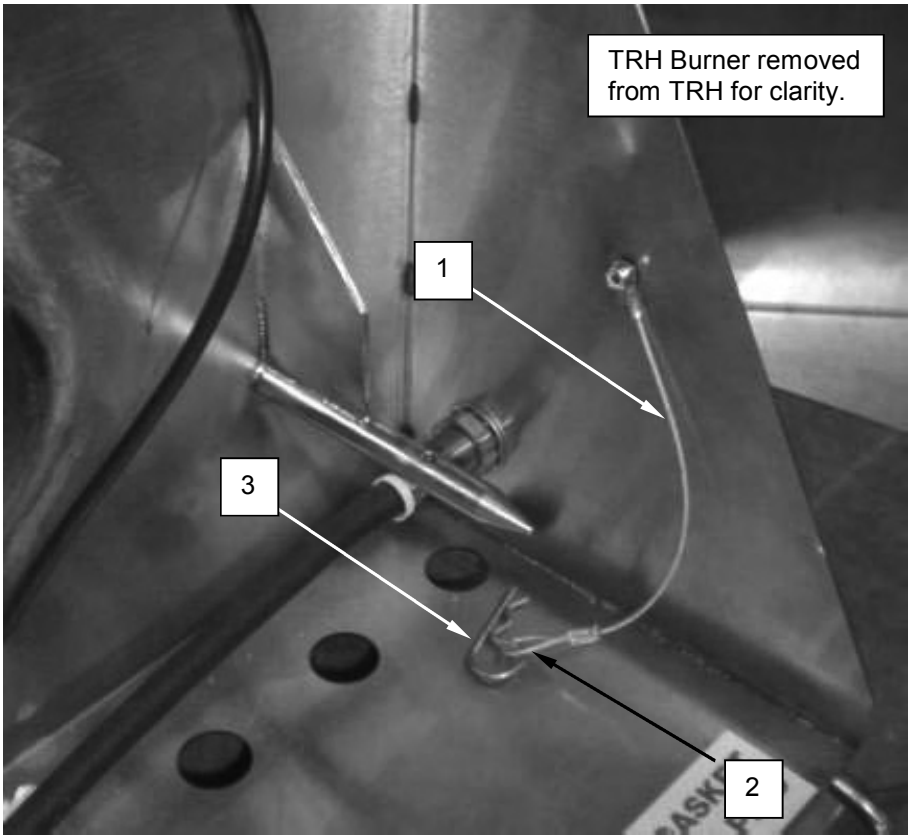


Figure 1. Pin Lock Removal.

REPAIR - CONTINUED

3. If the pin lock is not damaged, retain it for use with the replacement wire rope assembly.
4. Remove wire rope retaining nut (Figure 2, Item 1) from inside of TRH Burner housing on TRH Tank.
5. Remove wire rope (Figure 2, Item 2) and replace with serviceable part from stock.
6. Install wire rope retaining nut (Figure 2, item 1) and tighten securely.

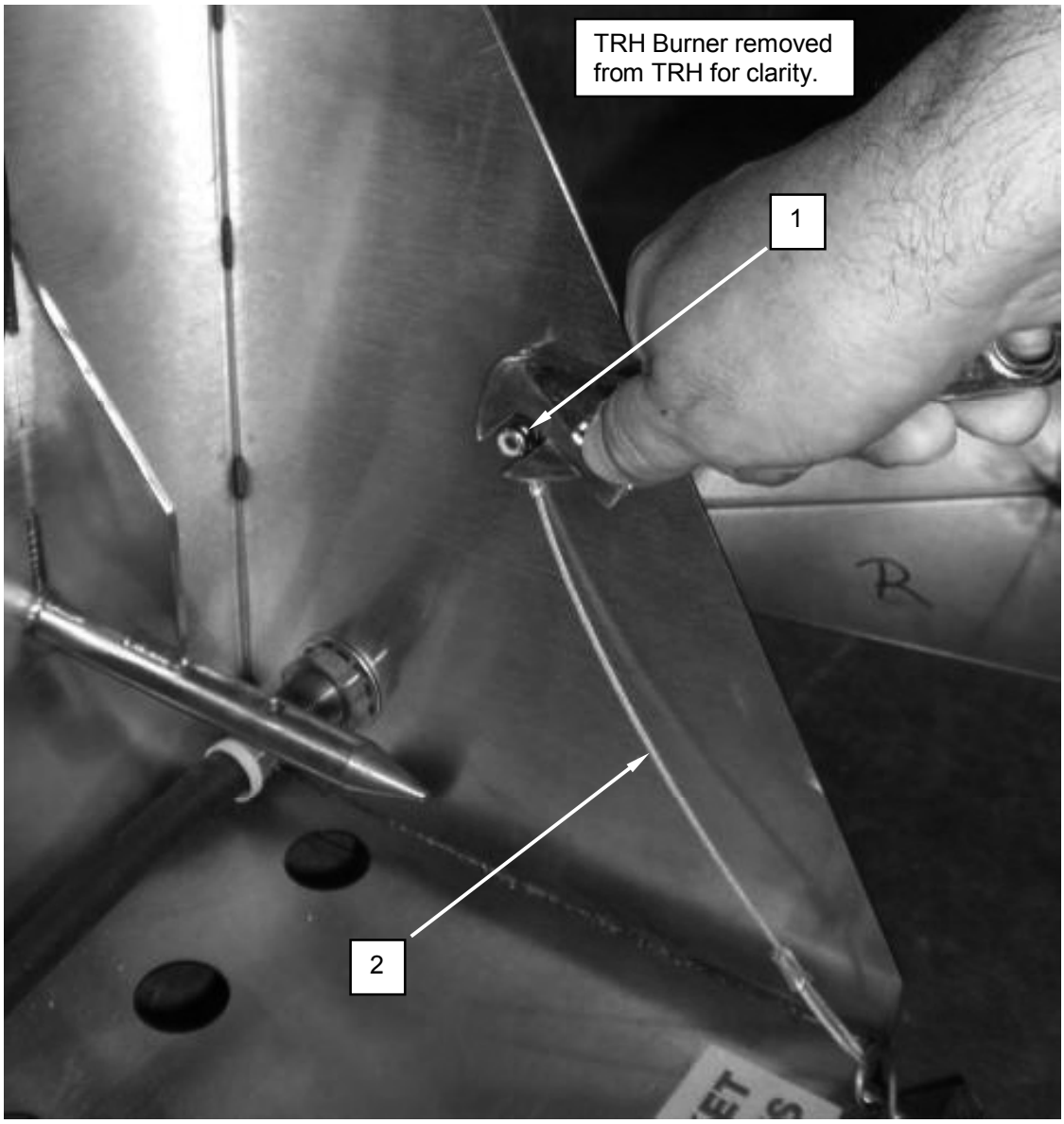


Figure 2. Replacing Wire Rope Assembly.

7. Place pin lock on wire rope assembly back in saddle pin by sliding pin lock through wire rope assembly eyelet.

END OF TASK

REPAIR - CONTINUED

Replacing the Pin Lock

1. Remove pin lock (Figure 3, Item 3) from saddle pin in TRH Burner housing.
2. Remove pin lock (Figure 3, Item 3) from wire rope assembly (Figure 3, Item 1) by sliding pin lock through wire rope assembly eyelet (Figure 3, Item 2).
3. Place replacement pin lock (Figure 3, Item 3) on wire rope assembly (Figure 3, Item 1) by sliding pin lock through wire rope assembly eyelet (Figure 3, Item 2).
4. Place pin lock back in saddle pin.

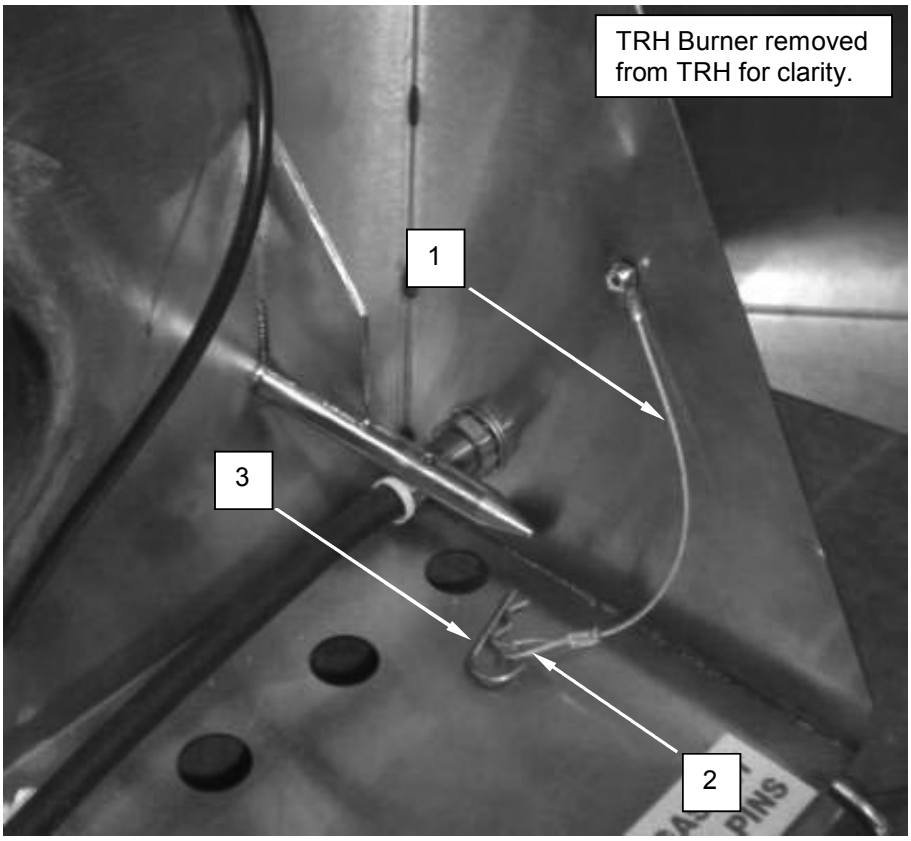


Figure 3. Pin Lock Replacement.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE

ADAPTER KIT, GRAVITY FEED
REPLACE

INITIAL SETUP:

Tools and Special Tools	Personnel Required
No Tools Required	Food Service Specialist 92G

REPLACE

WARNING

Do not attempt to connect a fuel line to the TRH in the vicinity of any open flame. Ensure that the fuel hose connections are made properly to avoid fuel spillage. Prevent a possible fire hazard by having absorbent materials or fuel mats on hand to absorb any spillage. Failure to observe safety precautions may result in injury or death to personnel.

1. Disconnect quick disconnect (QD) fitting (Figure 1, Item 2) connecting fuel hose (Figure 1, Item 3) to fuel can adapter (Figure 1, Item 1).

2. Remove fuel can adapter (Figure 1, Item 1) from fuel can, ensuring dip tube is connected to fuel can adapter (Figure 1, Item 1).

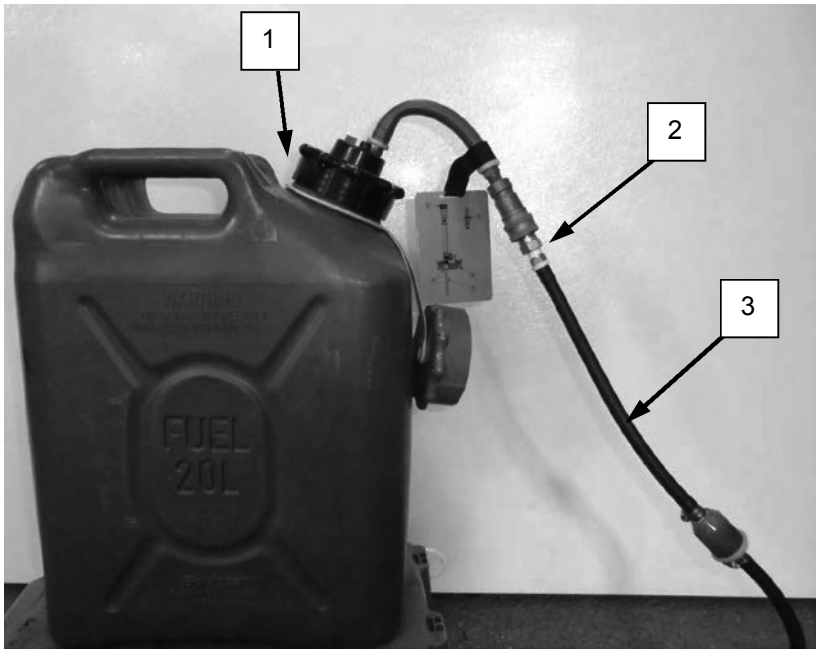


Figure 1. Disconnecting Fuel Hose.

REPLACE – CONTINUED

3. Ensure a dip tube is placed on replacement fuel can adapter by pressing dip tube (Figure 2, Item 3) into adapter tube fitting until it seats. Install fuel can adapter (Figure 2, Item 1) on fuel can by screwing adapter onto fuel can.

NOTE

Older fuel cans have a vent cock to allow for easy fuel flow during operation. If the fuel can being used is fitted with a vent cock, refer to step 4. If using a newer, self-venting fuel can adapter, skip to step 5.

4. For older fuel cans, vent fuel can by loosening vent cock on top of can adapter. Loosen vent cock by turning counterclockwise to fully open position (Figure 2, Item 2).

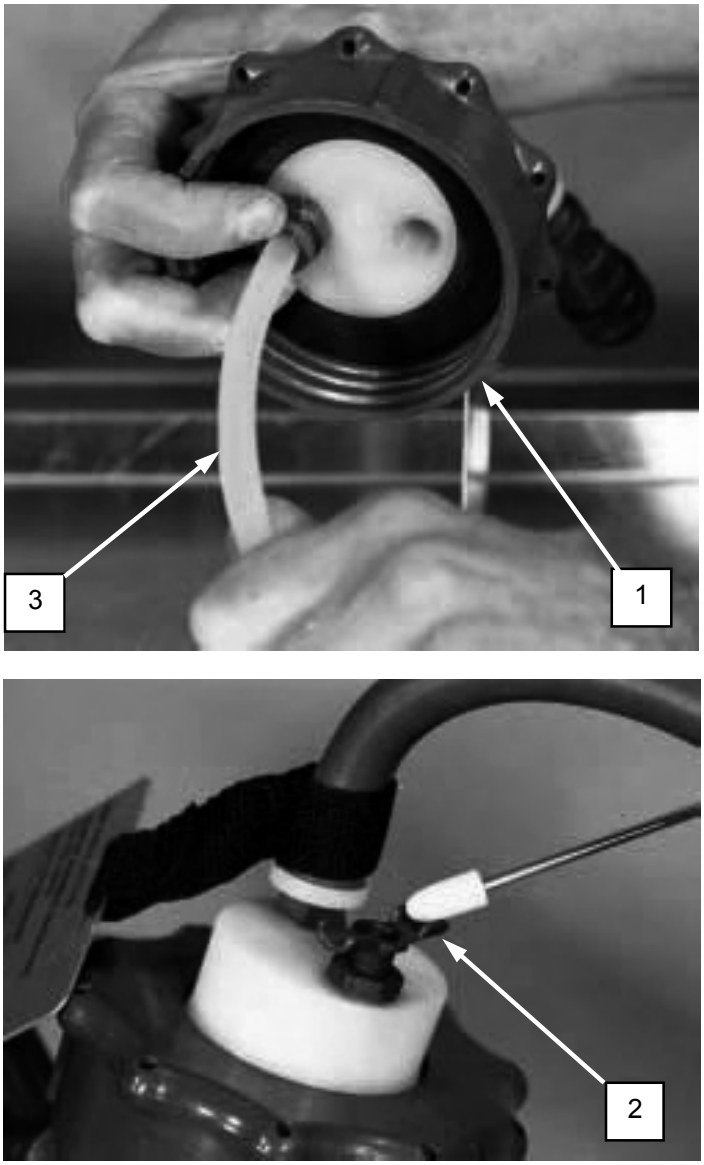


Figure 2. Fuel Can Adapter and Vent Cap.

REPLACE – CONTINUED

5. Connect fuel line (Figure 3, Item 2) to fuel can and TRH using two QD fittings (Figure 3, Item 1). Fuel filter (Figure 3, Item 3) should be closer to the fuel can than to the TRH.

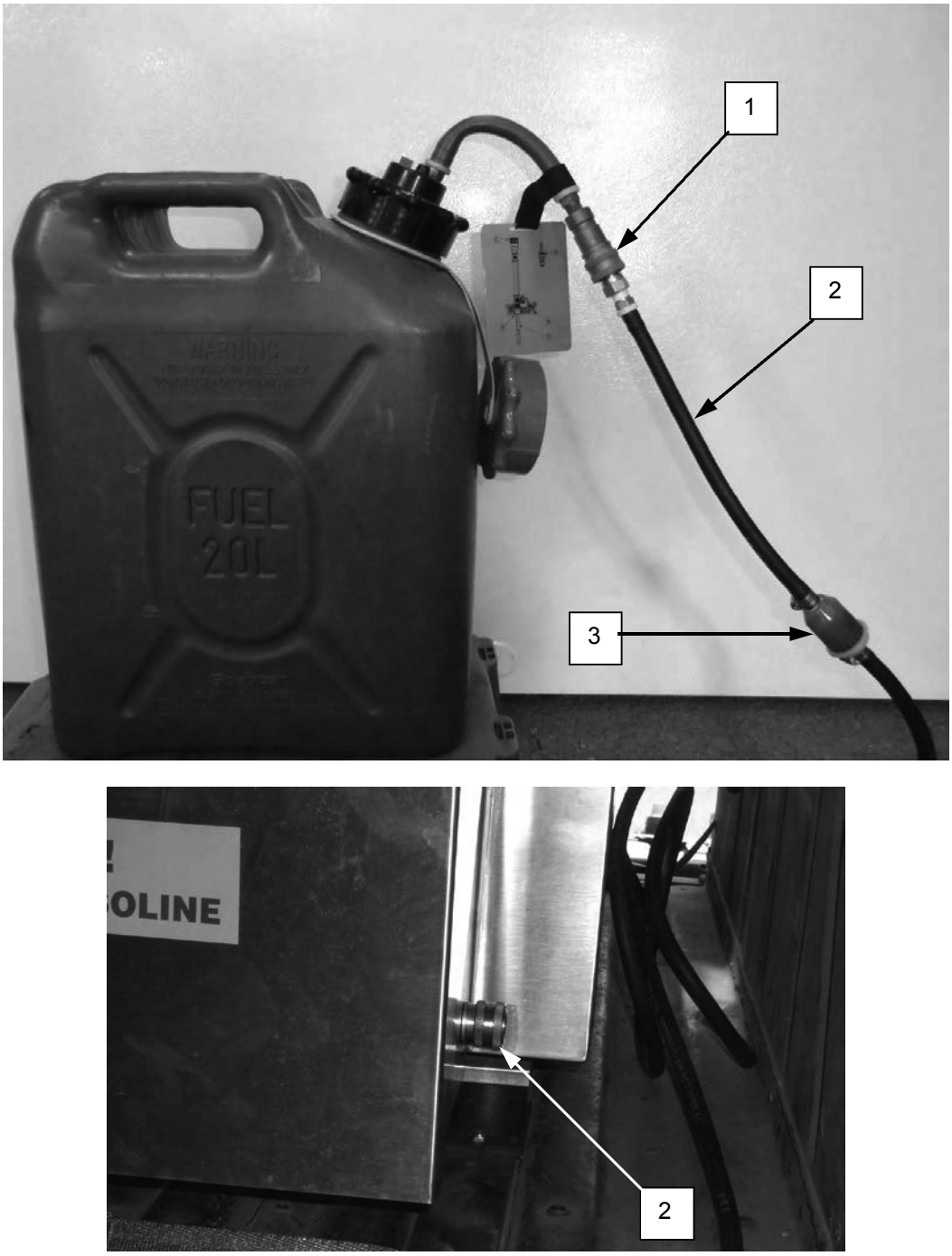


Figure 3. Fuel Line Connection.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE

FILTER ELEMENT, FLUID
REPLACE

INITIAL SETUP:

Tools and Special Tools

AK Tool Box (WP 0069, Item 3)

Materials/Parts

Oil and Water Absorbent Material (WP 0069, Item 1)
Drip Pan (or other suitable container)
Chemical and Oil Protective Gloves (WP 0069, Item 9)
Wiping Rag (WP 0069, Item 13)

Personnel Required

Food Service Specialist 92G (2)

Equipment Condition

Fuel and power disconnected

References

WP 0026

REPLACE

The fuel filters for the AK exist in two locations: one on the Tray Ration Heater (TRH) fuel line (Figure 1, Item 1) and one in the burner compartment of the TRH (Figure 1, Item 2). They are identical and the replacement procedures are the same for each filter. If necessary, remove burner IAW WP 0026 to access the filter in the burner compartment (Figure 1, Item 2).

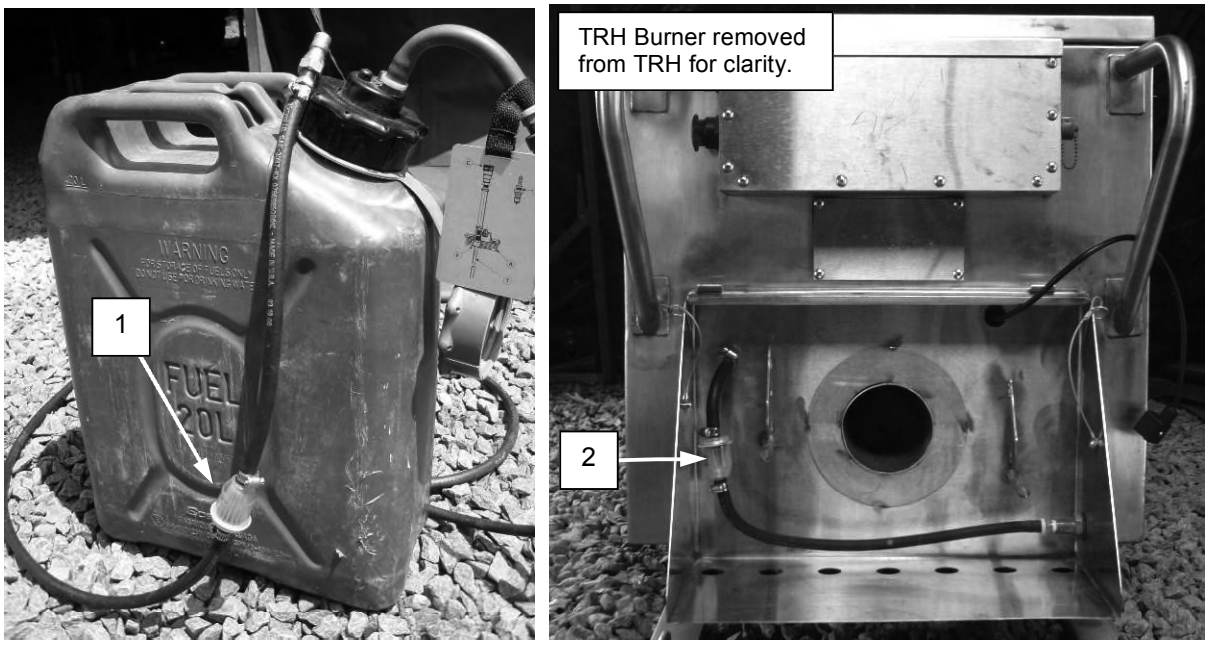


Figure 1. Fuel Filter Locations.

REPLACE – CONTINUED

WARNING

Do not attempt to service on a fuel line in the vicinity of any open flame. Ensure that the fuel hose connections are made properly to avoid fuel spillage. Prevent a possible fire hazard by having absorbent materials or fuel mats on hand to absorb any spillage. Failure to observe safety precautions may result in injury or death to personnel.

NOTE

Use gravity to drain fuel from fuel lines.

1. Loosen hose clamps (Figure 2, Item 1) on both sides of a filter with a flat-tip screwdriver. Pull fuel lines off of the filter.

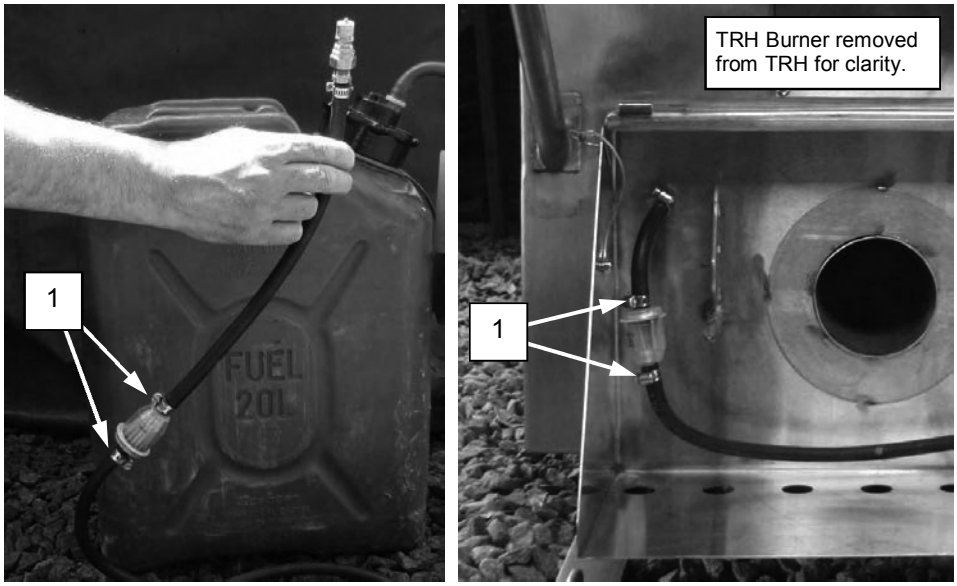


Figure 2. Replace Fuel Filters.

2. Make sure that hose clamps stay on the hose so that clamps easily slide into place once the hoses to the replacement filter are connected.

3. Plug fuel lines into ends of replacement filter, ensuring that arrow on fuel filter points in direction of fuel flow.

4. Tighten hose clamps on both sides of the fuel filter with a flat-tip screwdriver.

5. Dispose of unserviceable filter IAW unit SOP.

6. If necessary, reconnect fuel line to TRH tank.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE

RACK, TRAY RATION
REPLACE

INITIAL SETUP:

Personnel Required	Equipment Condition
Food Service Specialist 92G	TRH turned OFF and cooled

REPLACE

WARNING

DO NOT remove the tray pack rack immediately after TRH use. The tray pack rack may be hot. Allow the tray pack rack to cool before attempting to remove or wear protective gloves when handling tray pack rack.

1. Open the TRH tank lid (Figure 1, Item 1) and remove tray pack rack (Figure 1, Item 1).

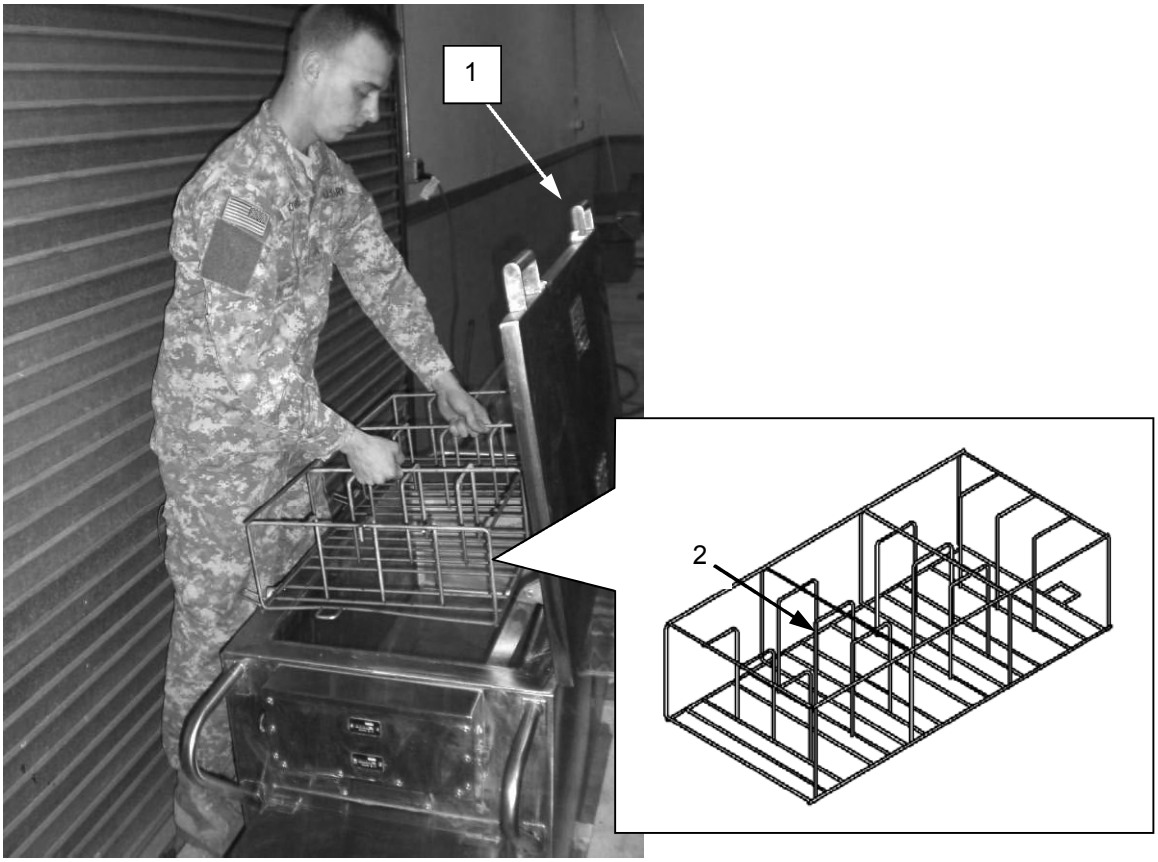


Figure 1. TRH Tray Rack Removal.

REPLACE - CONTINUED

2. Replace tray pack rack (Figure 2, Item 1) with standoff tab (Figure 2, Item 2) facing towards the TRH burner compartment.

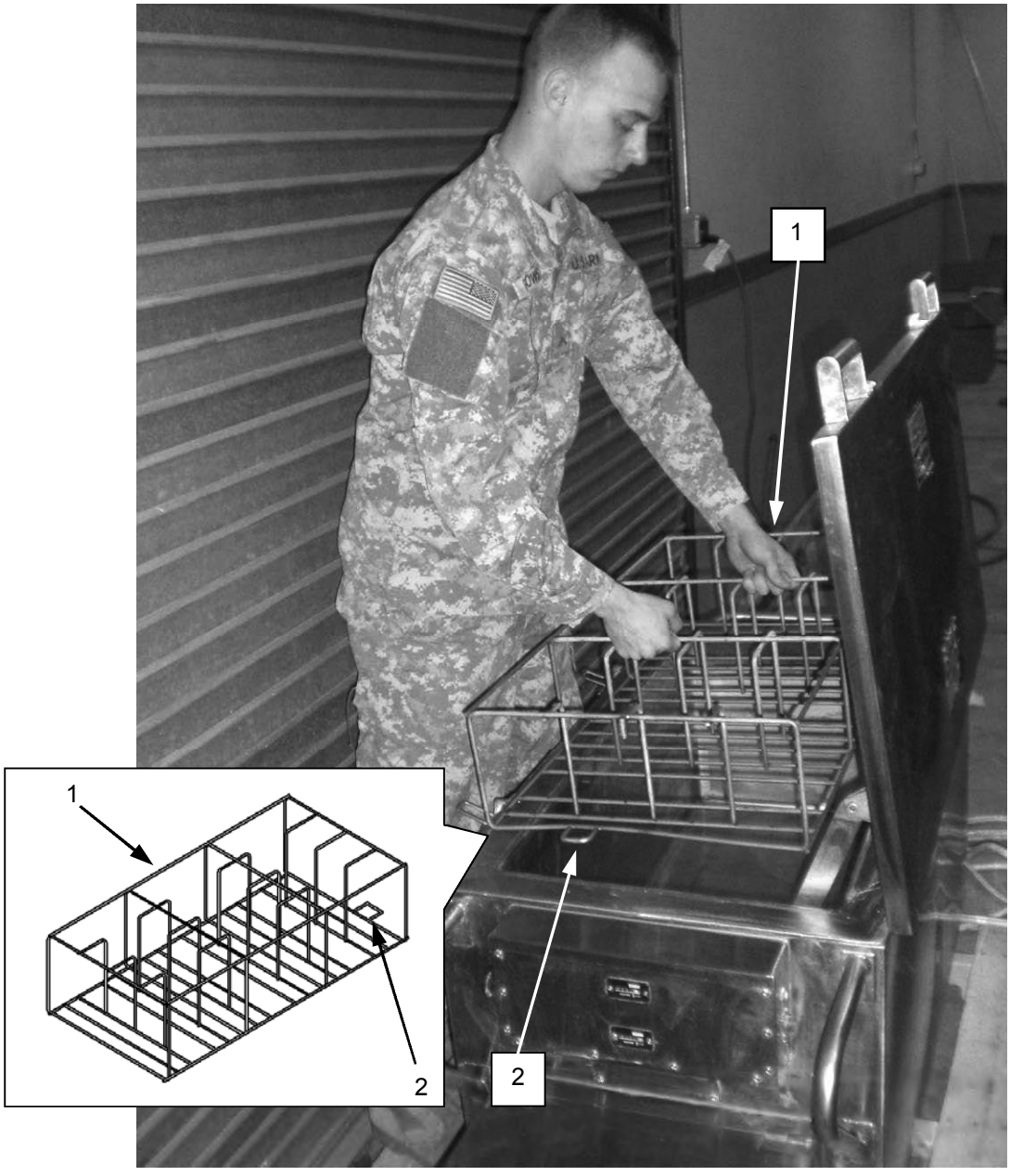


Figure 2. TRH Tray Rack Removal.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE

POWER CORD
REPLACE

INITIAL SETUP:

Personnel Required

Food Service Specialist 92G

REPLACE

1. Disconnect TRH power cord from electrical connector receptacle on TRH electrical control box (Figure 1, Item 1) by twisting and pulling connector away from receptacle.

2. Disconnect TRH power cord 3 prong connector from the GFCI outlet on the power inverter (Figure 1, Item 2).

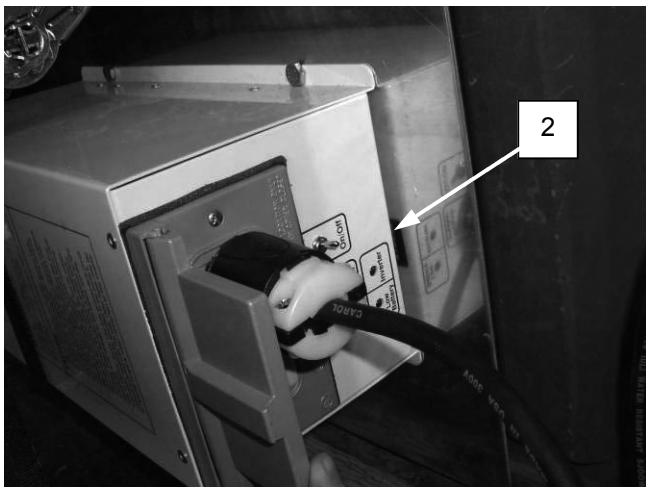


Figure 1. TRH Power Connections.

REPLACE – CONTINUED

3. Connect replacement TRH power cord electrical connector to electrical connector receptacle on TRH electrical control box (Figure 2, Item 1).

4. Connect TRH power cord 3-prong connector to the GFCI outlet on the power inverter (Figure 2, Item 2).

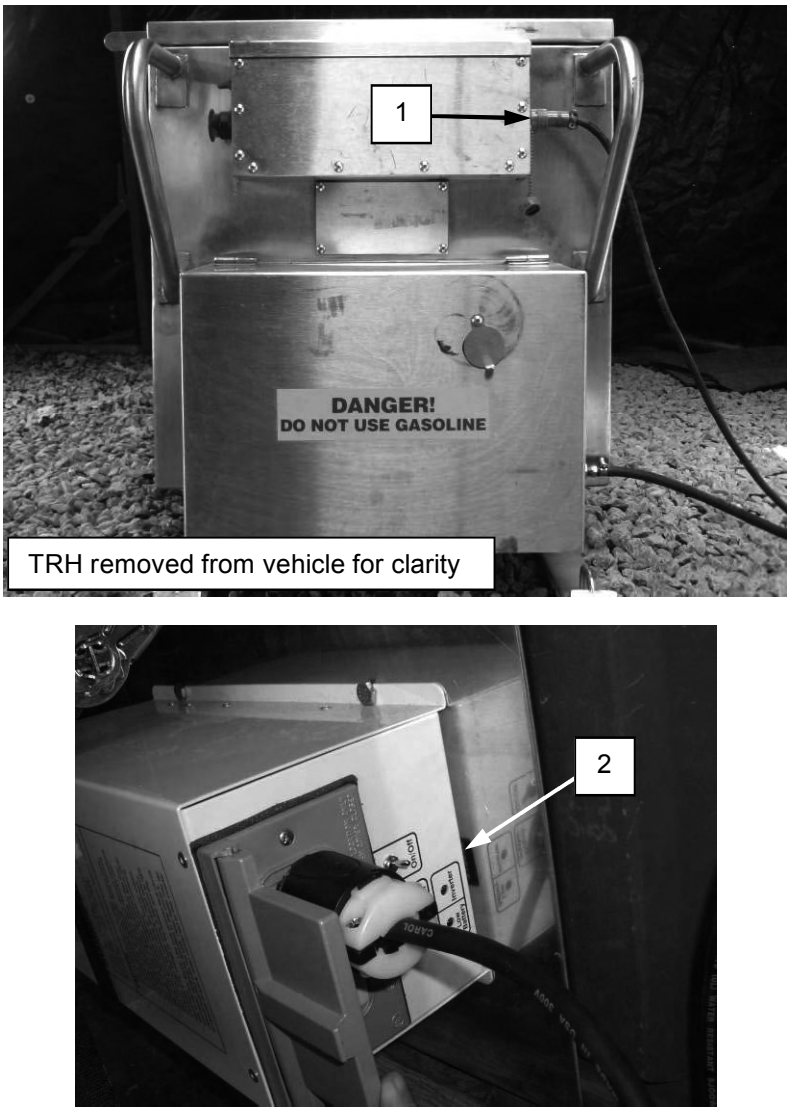


Figure 2. TRH Power Connections.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE

**LID ASSEMBLY,
ADJUST, REPLACE**

INITIAL SETUP:

Tools and Special Tools	Personnel Required
AK Tool Box (WP 0069, Item 3)	Food Service Specialist 92G Non-specified MOS
Materials/Parts	**Equipment Condition**
Vegetable Oil (WP 0069, Item 20)	TRH turned OFF and allowed to cool

ADJUST

Adjusting the Lid Latches

1. Release lid latches by pulling handles up.
2. Adjust lid latch (Figure 1, Item 2) by adjusting position of upper (Figure 1, Item 1) and lower (Figure 1, Item 3) retaining nuts on both sides of lid latch.

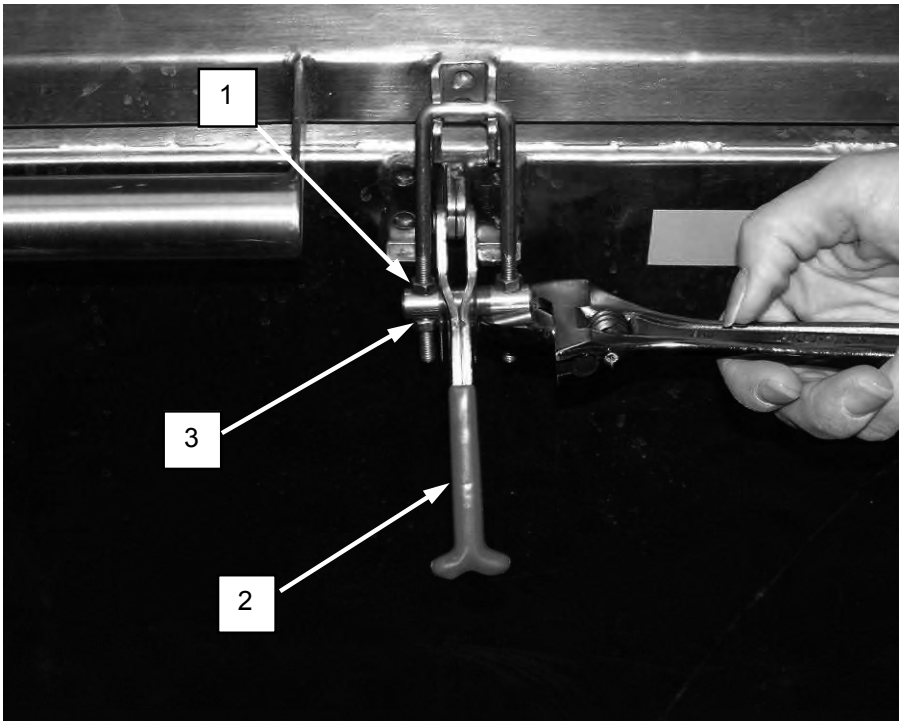


Figure 1. Adjusting the Lid Latch.

3. Ensure the lid is tight enough to compress the lid latch and prevent water leakage. Do not tighten to the point where excessive force is required to close and secure lid latches.

END OF TASK

ADJUST – CONTINUED

Adjusting the Lid Alignment

1. Raise lid and latch.
2. Remove lid stop bolt (Figure 2, Item 1).
3. Hold lid upright and pull lid stop bolt out of the lid stop.

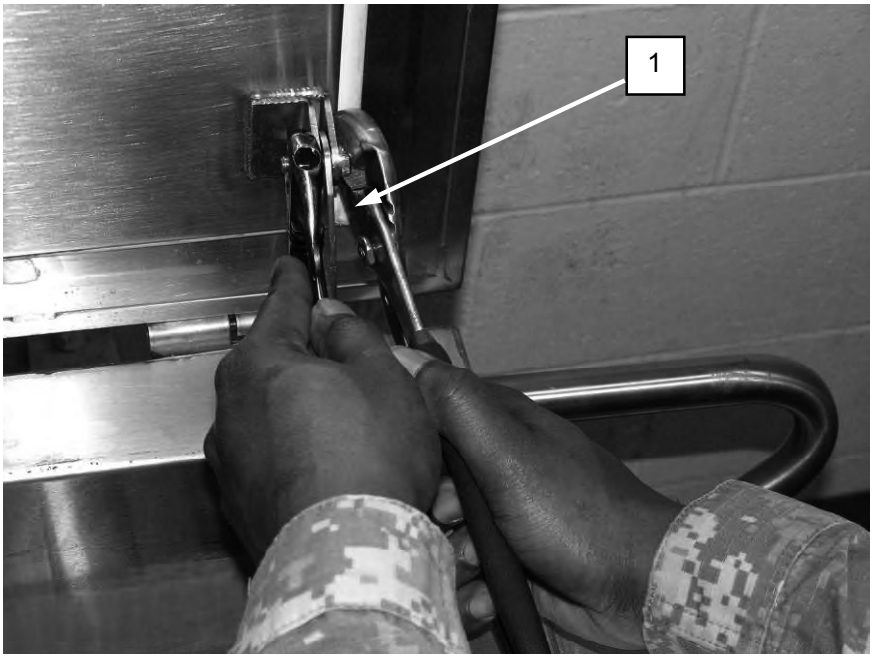


Figure 2. Removing Lid Stop Bolt.

4. Remove lid stop and hardware from lid bracket (Figure 3, Item 1) and retain with TRH Tank.

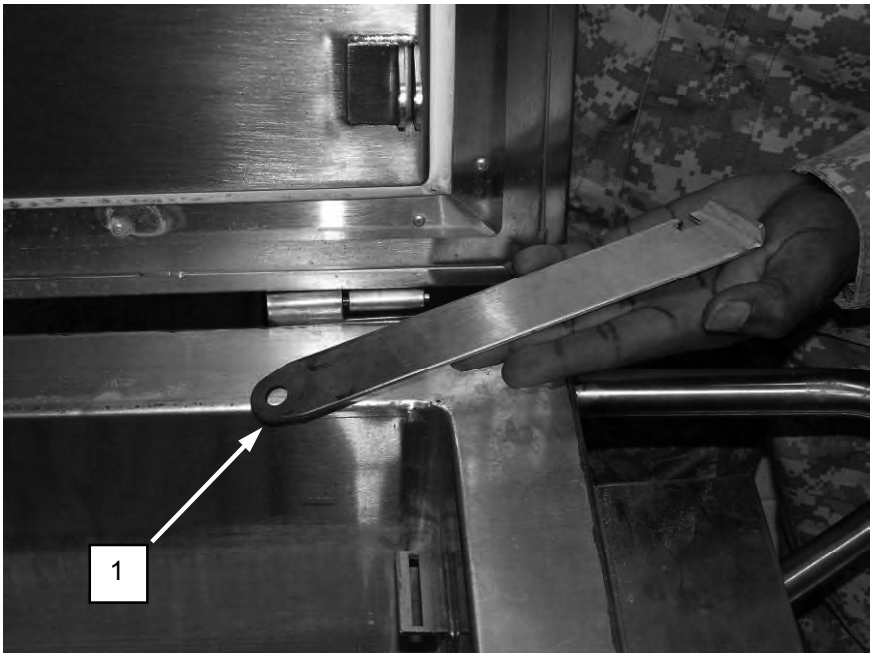


Figure 3. Removing Lid Stop.

ADJUST – CONTINUED

5. Adjust the alignment of the TRH Lid by tapping the lid (Figure 4, Item 2) towards the desired direction with a hammer (Figure 4, Item 3) and a block of wood (Figure 4, Item 1).

Figure 4. Adjusting the TRH Tank Lid.

6. Close and test fit lid. Repeat steps as necessary until proper adjustment is achieved.

7. Re-install lid stop.

END OF TASK

REPLACE

1. Raise lid and latch.
2. Remove lid stop bolt (Figure 5, Item 1).
3. Hold lid upright and pull lid stop bolt out of the lid stop.

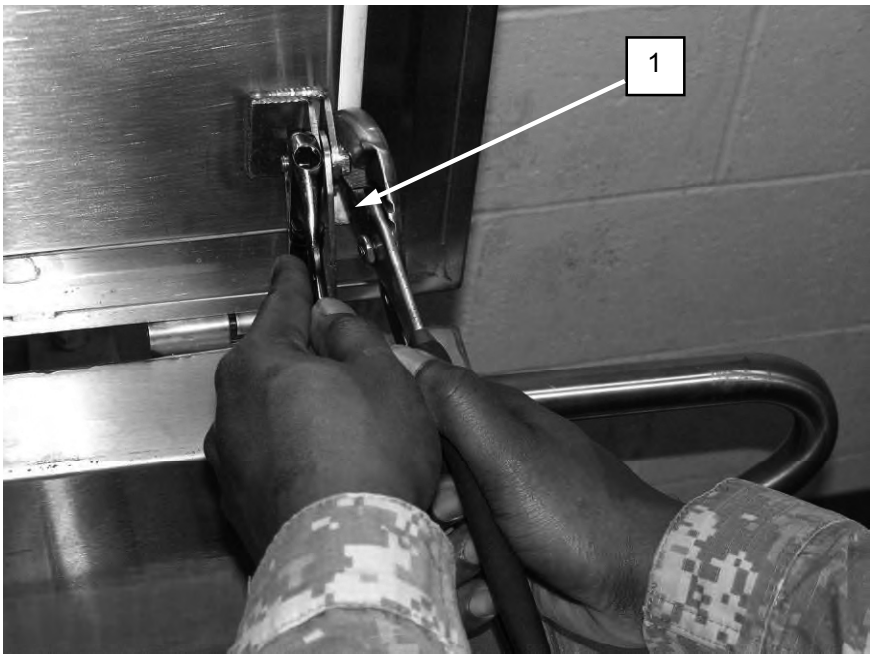


Figure 5. Removing Lid Stop Bolt.

4. Remove lid stop from lid assembly bracket (Figure 6, Item 1).

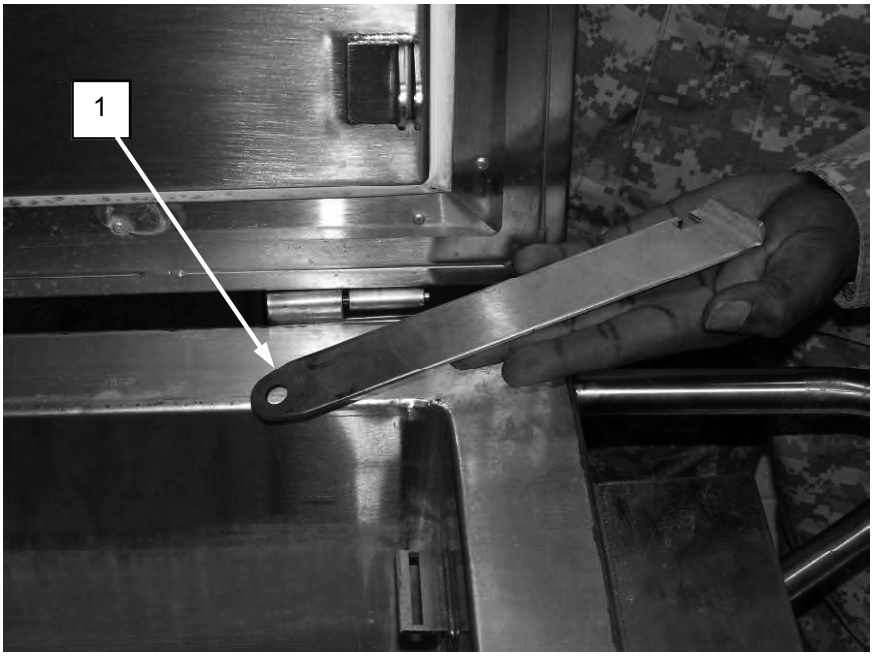


Figure 6. Removing Lid Stop.

REPLACE – CONTINUED

5. Using a hammer and a block of wood, tap lid (Figure 7, Item 1) toward burner assembly until it separates from the TRH.

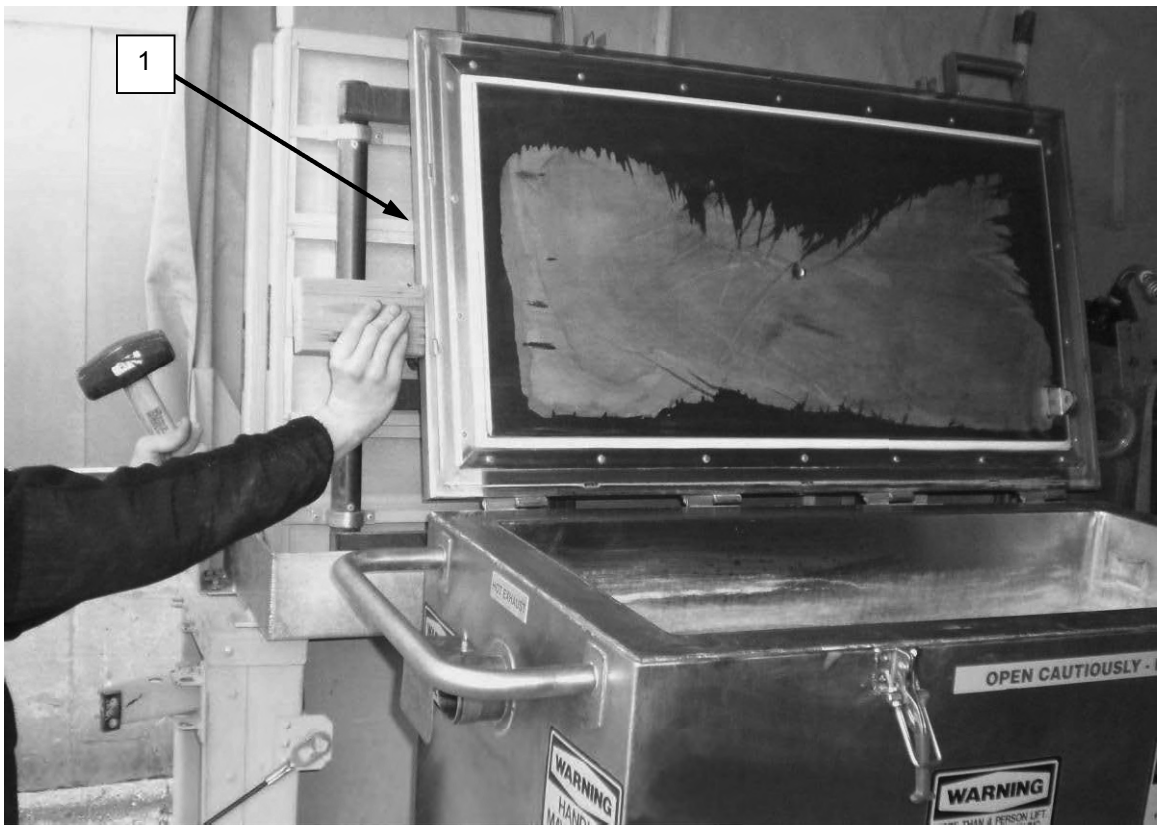


Figure 7. Unseating Lid With Hammer.

REPLACE – CONTINUED

WARNING

The TRH lid ways approximately 42 lbs. Use two people, lifting with legs, not back, to remove and install the TRH lid. Failure to observe this warning may result in injury to personnel.

NOTE

Installation of a new lid assembly may require light lubrication. Apply a light coating of food safe vegetable oil to the replacement lid hinges, if necessary.

6. Install new lid (Figure 8, Item 1) by aligning the hinges with the lid hinge pins (Figure 8, Item 2) and tapping the lid with a hammer and a block of wood toward the exhaust end of the TRH.

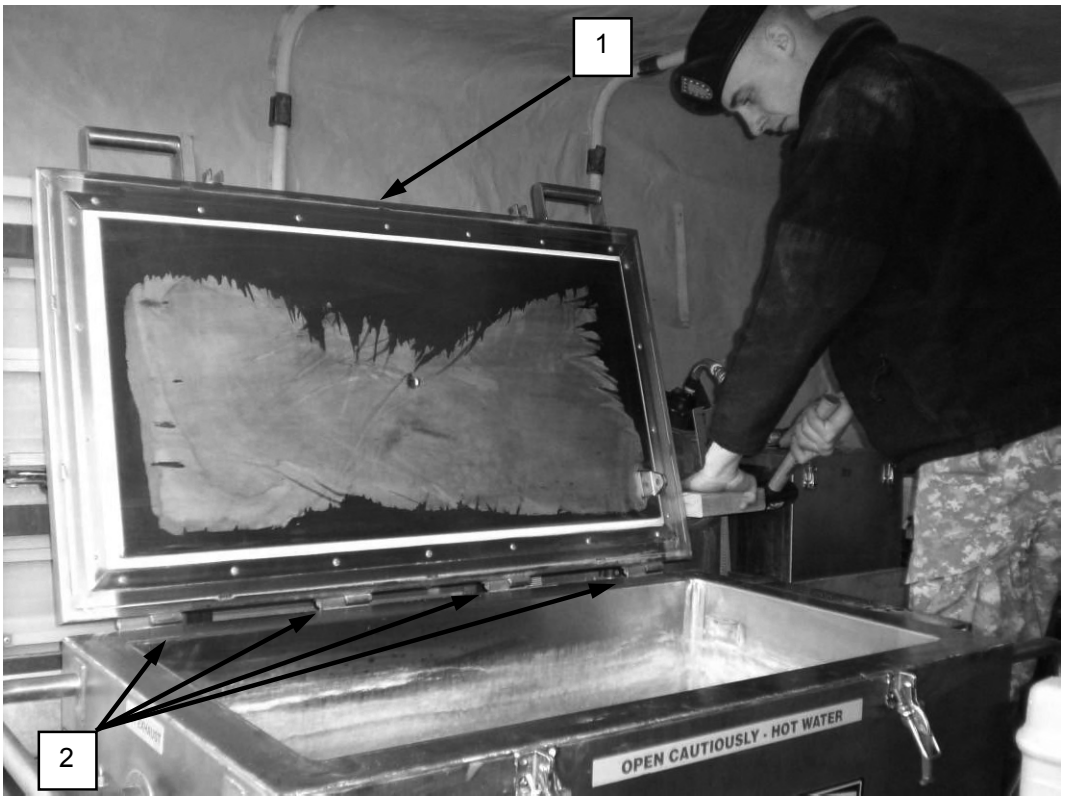


Figure 8. Aligning the TRH Tank Lid.

7. Close and test fit lid. Adjust lid alignment as necessary until proper alignment is achieved.

8. Reinstall lid stop.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE

STRAIGHT PIPE TO HOSE ADAPTER REPLACE

INITIAL SETUP:

Tools and Special Tools	Personnel Required
AK Tool Box (WP 0069, Item 3)	Food Service Specialist 92G
Materials/Parts	**Equipment Condition**
Teflon Tape (WP 0069, Item 19)	TRH Tank Empty

REPLACE

1. Using slip-joint pliers and an adjustable wrench, remove pipe to hose adapter (Figure 1, Item 1) from ball valve (Figure 1, Item 2) by placing pliers across the “flats” of the pipe to hose adapter and drain valve.

2. Hold ball valve steady and rotate the pipe to hose adapter counter clockwise.

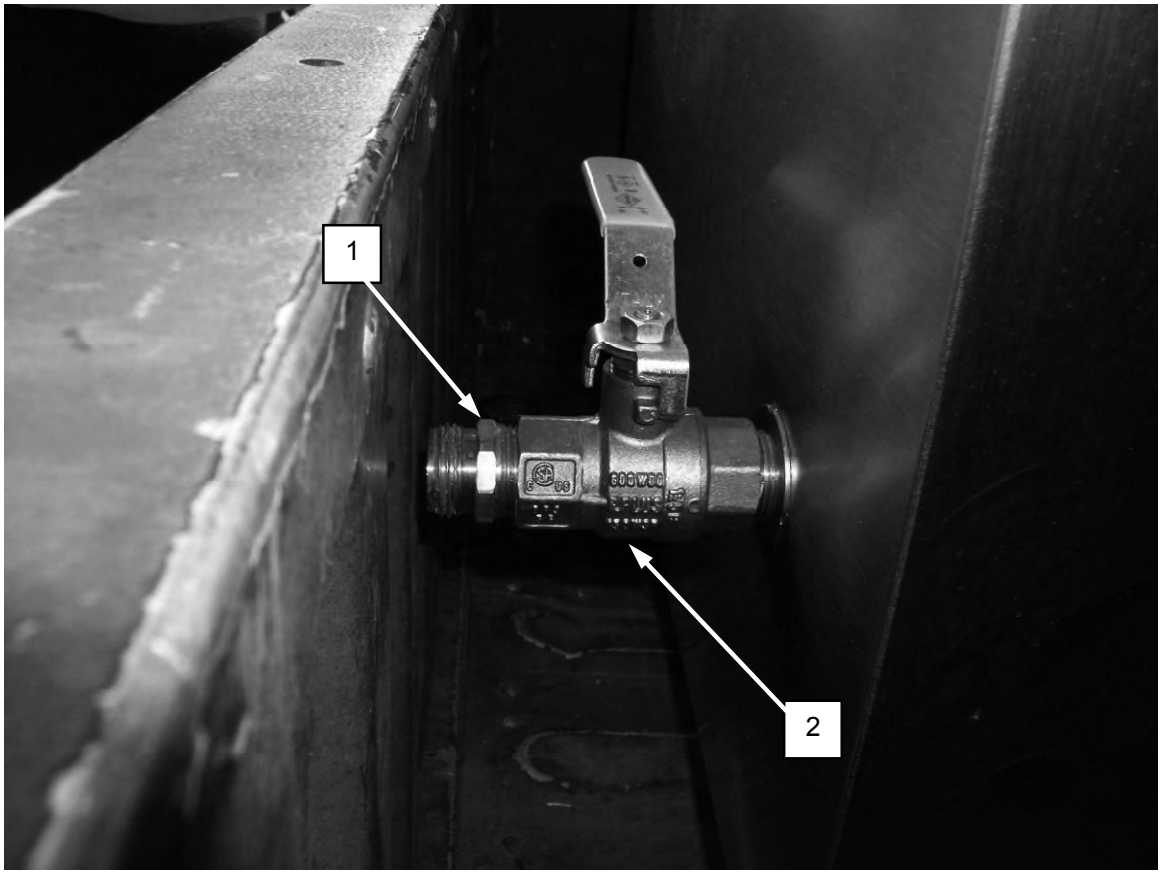


Figure 1. Removing the Pipe to Hose Adapter.

REPLACE – CONTINUED

3. Remove and replace pipe to hose adapter (Figure 2, Item 1) with serviceable item.

4. Using a minimum of two wraps, apply Teflon tape to threads on end of ball valve by wrapping clockwise.

5. Hand thread the new pipe to hose adapter (Figure 1, Item 1) onto end of ball valve.

6. Using slip-joint pliers and an adjustable wrench, tighten the pipe to hose adapter (Figure 1, Item 1) onto ball valve until secure, do not over tighten.

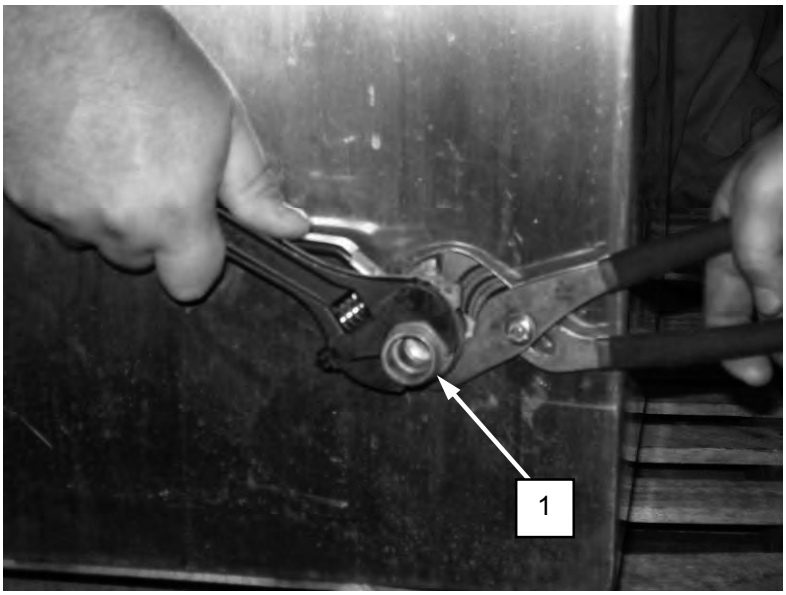


Figure 2. Installing the Pipe to Hose Adapter.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE

BALL VALVE
REPLACE

INITIAL SETUP:

Tools and Special Tools	Personnel Required
AK Tool Box (WP 0069, Item 3)	Food Service Specialist 92G
Materials/Parts	**Equipment Condition**
Teflon Tape (WP 0069, Item 19)	TRH Tank Empty

REPLACE

1. Using slip-joint pliers and an adjustable wrench, remove the pipe to hose adapter (Figure 1, Item 2) from ball valve (Figure 1, Item 1) by placing pliers across the “flats” of the pipe to hose adapter and drain valve.
2. Hold ball valve steady with one pair of slip-joint pliers and rotate the pipe to hose adapter counter clockwise with the adjustable wrench.
3. Remove pipe to hose adapter and retain for use with replacement ball valve.

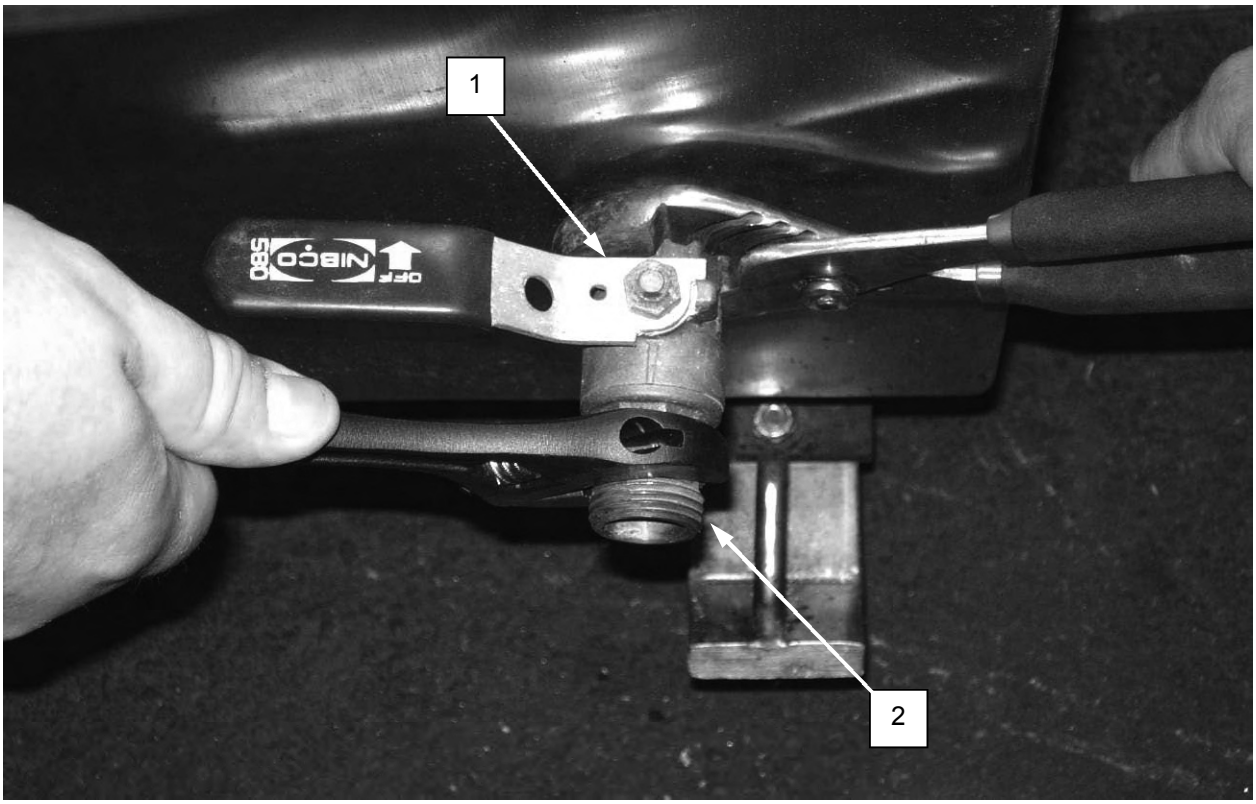


Figure 1. Removing the Pipe to Hose Adapter.

REPLACE – CONTINUED

4. Using slip-joint pliers, remove ball valve (Figure 2, Item 1) by placing pliers across the “flats” of the ball valve closest to the tank and rotating the ball valve counter clockwise.

5. Using a minimum of two wraps, apply Teflon tape to threaded drain pipe on TRH Tank by wrapping clockwise.

6. Hand thread the replacement ball valve (Figure 2, Item 1) onto the TRH Tank.

7. Tighten the replacement ball valve (Figure 2, Item 1) with the wrench until the handle is on top, do not over tighten.

8. Using a minimum of two wraps, apply Teflon tape to threads on end of ball valve by wrapping clockwise.

9. Hand thread the pipe to hose adapter onto end of the replacement ball valve (Figure 2, Item 1).

10. Using slip-joint pliers and an adjustable wrench, tighten the pipe to hose adapter onto the replacement ball valve (Figure 2, Item 1) until secure. Do not over tighten.

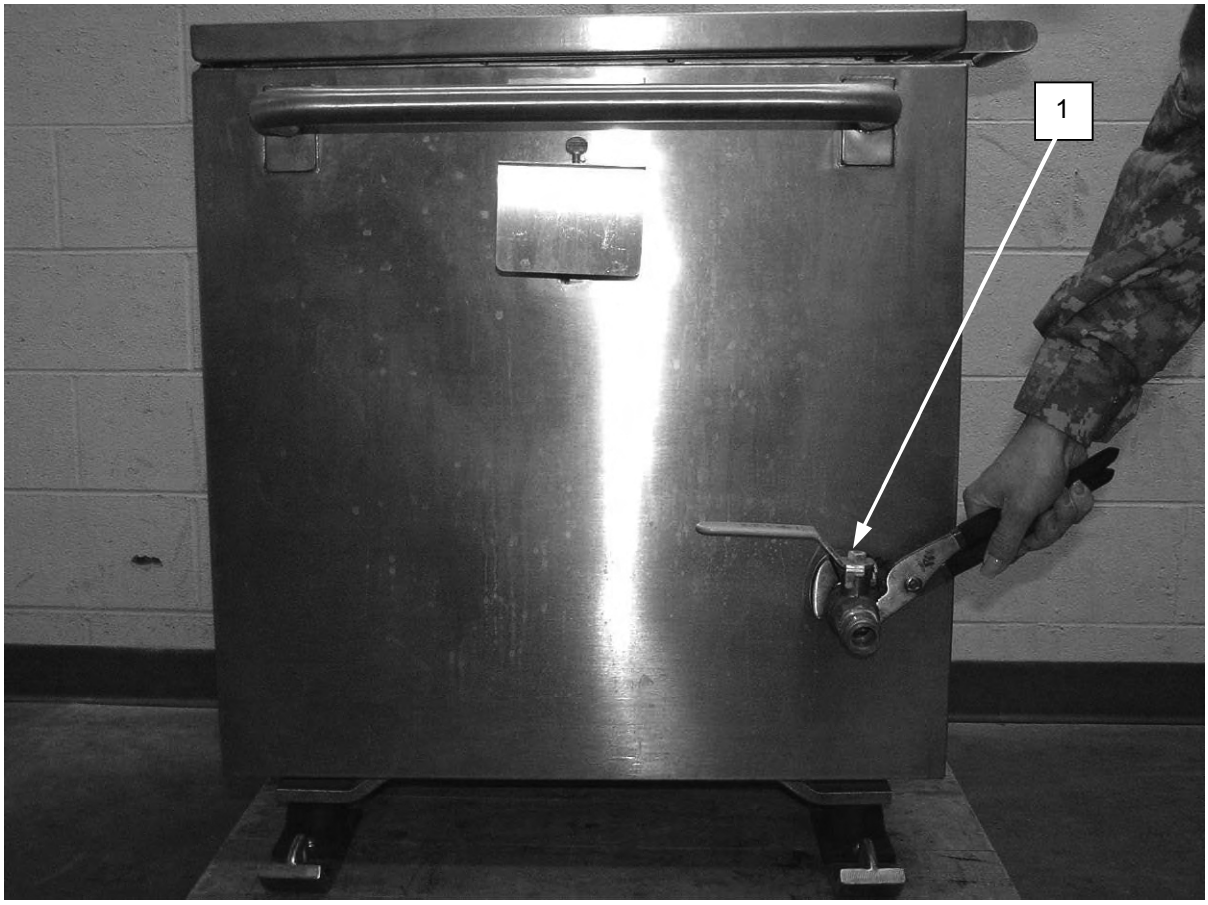


Figure 2. Replacing the Drain Valve.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE

EXHAUST DEFLECTOR
REPLACE

INITIAL SETUP:

Equipment Condition	Personnel Required
TRH turned OFF and cooled	Food Service Specialist 92G

REPLACE

WARNING

DO NOT touch hot metal surfaces with bare hands. Allow surfaces to cool or wear protective gloves when performing maintenance on a hot metal surface. Failure to observe warnings may result in injury or death to personnel.

NOTE

Exhaust deflector should remain on TRH at all times.

1. Loosen the exhaust deflector retaining screw (Figure 1, Item 1).
2. Slide the exhaust deflector (Figure 1, Item 3) away from TRH tank until exhaust deflector is free from exhaust pipe (Figure 1, Item 2).

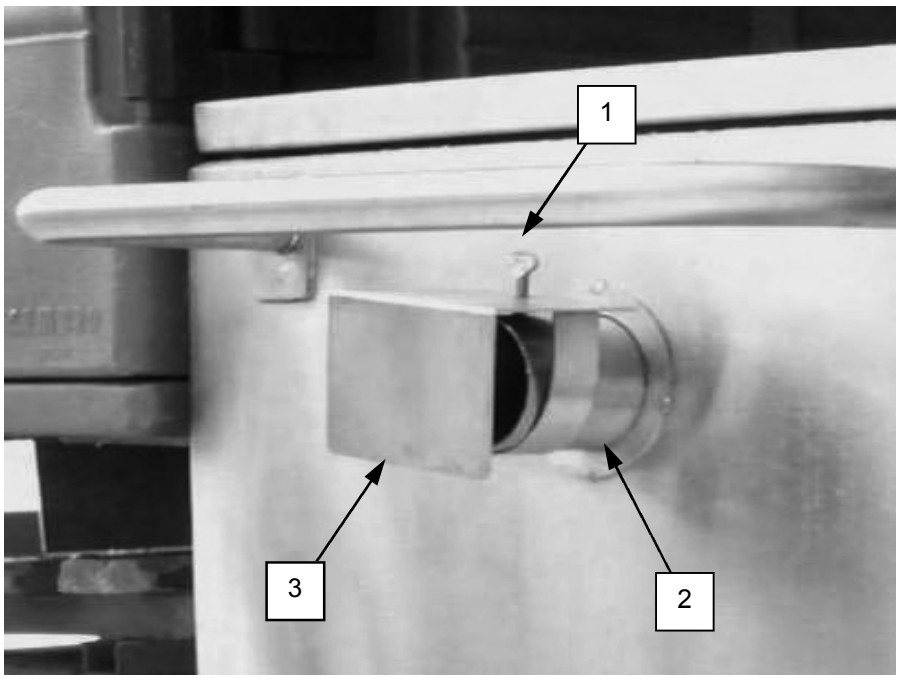


Figure 1. TRH Exhaust Deflector.

REPLACE - CONTINUED

3. Slide replacement exhaust deflector (Figure 2, Item 4) over TRH exhaust pipe (Figure 2, Item 2) until exhaust deflector is secure to pipe but not blocking pipe opening (Figure 2, Item 3). Orient Exhaust deflector downward.

4. Hand tighten exhaust deflector retaining screw (Figure 2, Item 1).

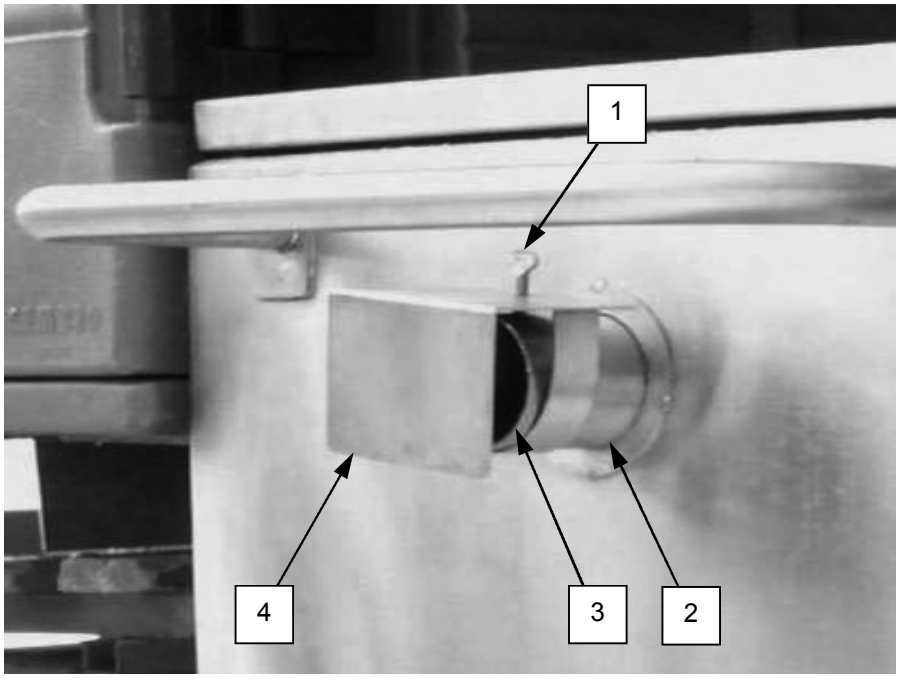


Figure 2. TRH Exhaust Deflector.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE

BURNER, MULTI-FUEL
REPLACE

INITIAL SETUP:

Tools and Special Tools

AK Tool Box (WP 0069, Item 3)

Personnel Required

Food Service Specialist 92G

Materials/Parts

Chemical and Oil Protective Gloves (WP 0069, Item 9)
Industrial Goggles (WP 0069, Item 10)
Oil and Water Absorbent Material (WP 0069, Item 1)
Wiping Rag (WP 0069, Item 13)

REPLACE

Burner Removal

Burner removal procedure begins on the next page.

REPLACE – CONTINUED

WARNING

Do not attempt service procedures on a Tray Ration Heater (TRH) burner or MBU that has recently been in operation. Let the burner cool down before performing these procedures. Failure to observe safety precautions may result in injury or death to personnel.

Before removing the TRH burner from the TRH, ensure the TRH Red, Pull-on/Push-off switch is in the OFF position and the TRH is unplugged from power source to prevent electrical shock and inadvertent burner ignition.

1. Ensure the red, Pull-on/Push-off switch (Figure 1, Item 3) is set to the OFF position on the TRH.
2. Ensure TRH is not connected to any power source to prevent electrical shock and inadvertent burner ignition.
3. Disconnect fuel line from TRH tank at quick disconnect (QD) fitting (Figure 1, Item 1).
4. Lift burner cover (Figure 1, Item 2) and gently tap cover to the right to remove from hinges.

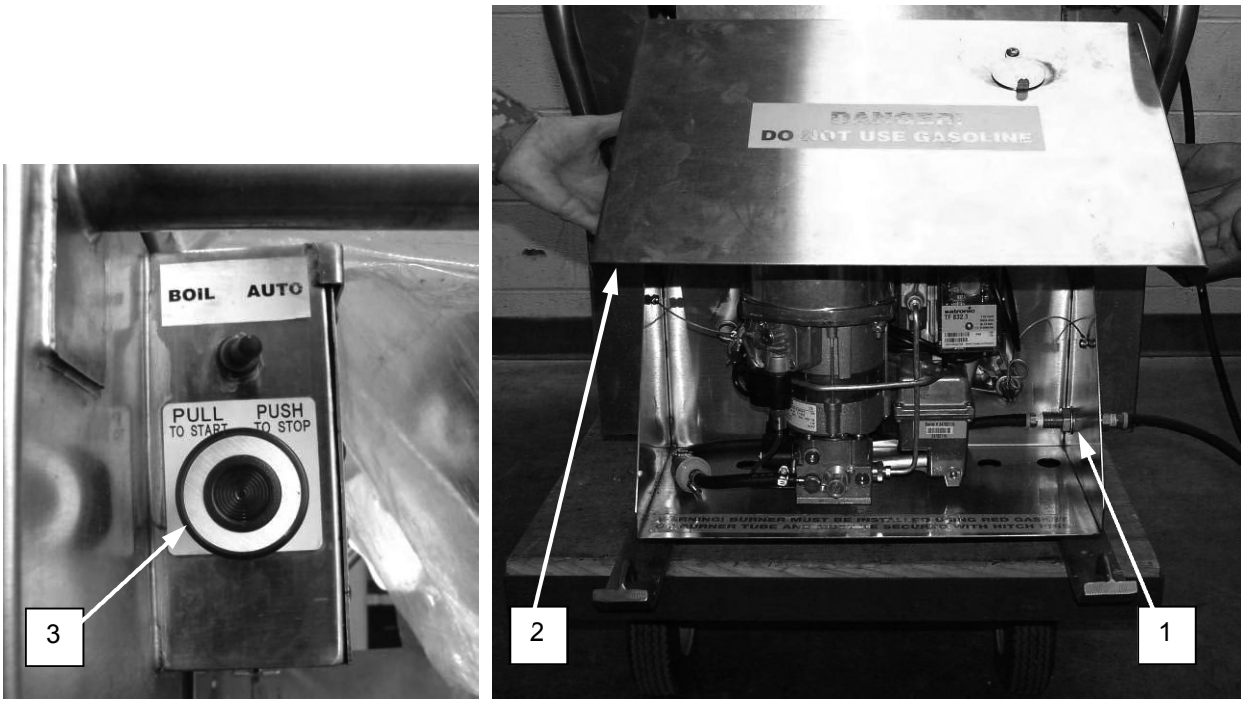


Figure 1. Burner On/Off Switch and Cover Removal.

REPLACE – CONTINUED

WARNING

Do not attempt to disconnect a fuel line on the TRH in the vicinity of any open flame. Ensure that the fuel hose connections are made properly to avoid fuel spillage. Prevent a possible fire hazard by having absorbent materials or fuel mats on hand to absorb any spillage. Failure to observe safety precautions may result in injury or death to personnel.

5. Remove fuel line connection by loosening the attached hose clamp (Figure 2, Item 1) and place fuel line on stud (Figure 2, Item 2) in TRH burner compartment.

6. Loosen integral screw enough to remove female power cord plug (Figure 2, Item 3).

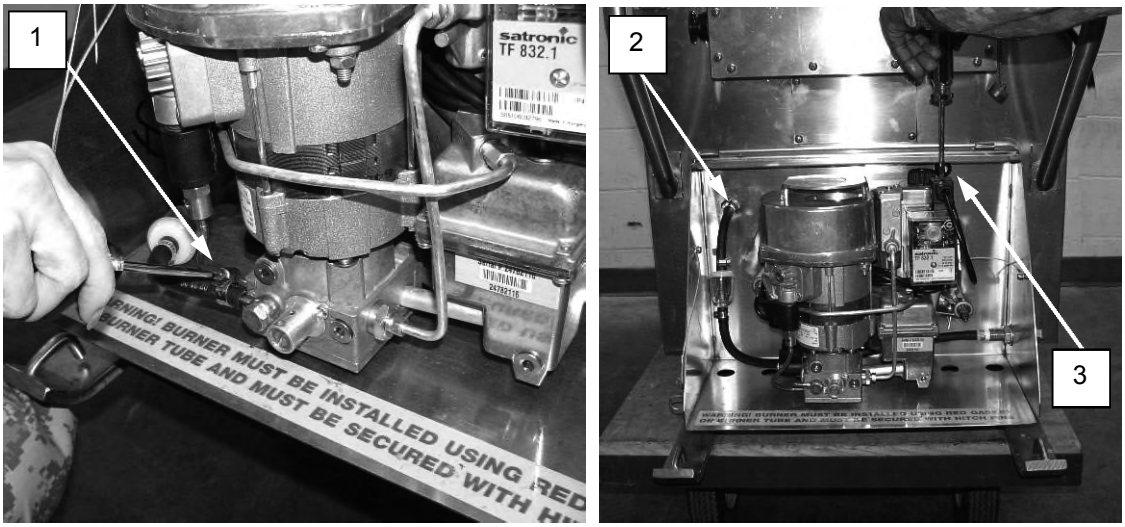


Figure 2. Hose Clamp and Power Cord Removal.

7. Remove two hitch-pins (Figure 3, Item 1) and clip them to the side of burner housing.

Figure 3. Remove Hitch Pins.

REPLACE – CONTINUED

WARNING

Use caution when removing the burner from the TRH. Prevent a possible fire hazard by having absorbent materials or fuel mats on hand to absorb any spillage. Failure to observe safety precautions may result in injury or death to personnel.

Tipping burner downward during removal may result in fuel spilling from burner tube.

8. Without letting the TRH burner tip downward, slide the burner straight out from the TRH using two hands.

9. Place TRH burner on a suitable work surface.

WARNING

Use caution when draining fuel from the TRH burner. Prevent a possible fire hazard by having absorbent materials or fuel mats on hand to absorb any spillage. Failure to observe safety precautions may result in injury or death to personnel.

Use caution when draining fuel from the TRH burner. Fuel draining from the TRH burner fuel sump may flow rapidly. This could cause fuel spatter or spills on skin or clothing. Keep eyes protected and wash any clothing, equipment, or skin that is contaminated by fuel.

NOTE

Be sure to retrieve and replace sump plug after draining fuel from TRH burner fuel sump. During removal, fuel sump plug may fall into drainage container. If this occurs do not forget to retrieve and replace sump plug.

10. Drain fuel from TRH burner by removing fuel sump drainage plug (Figure 4, Item 1) and draining fuel into an acceptable container (Figure 4, Item 2).

REPLACE – CONTINUED

11. Install drain plug when TRH burner is empty.

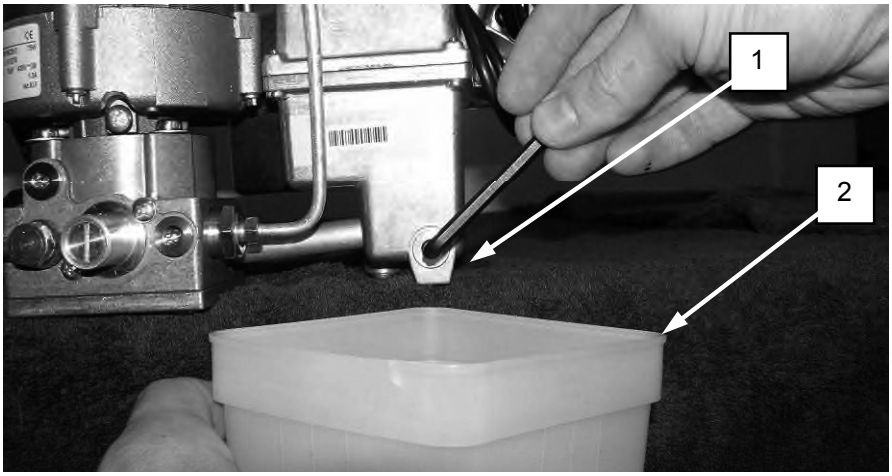


Figure 4. Draining Fuel Sump.

END OF TASK

Burner Installation

CAUTION

DO NOT install a TRH burner in the TRH without a red flange gasket. The gasket is used to protect the body of the TRH and the TRH burner components. Failure to install a flange gasket on a TRH burner before installation may result in damage to equipment.

1. Check the serviceability of red flange gasket (Figure 5, Item 1). If gasket is unserviceable, replace with serviceable gasket.

2. Ensure the burner to be installed has a red flange gasket on the flame tube before placing in the TRH.

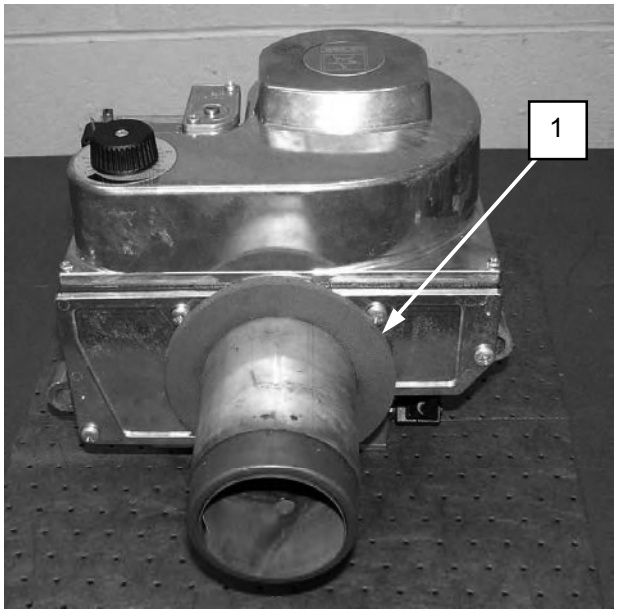


Figure 5. Burner with Red Flange Gasket.

REPLACE – CONTINUED

3. Using two hands, slide burner onto the saddle pins (Figure 6, Item 2) and install the retaining hitch-pins from the saddle pins on both sides of the burner.

4. Install fuel line on suction inlet port (Figure 6, Item 1) and tighten fuel hose clamp. Clean up any fuel spills.

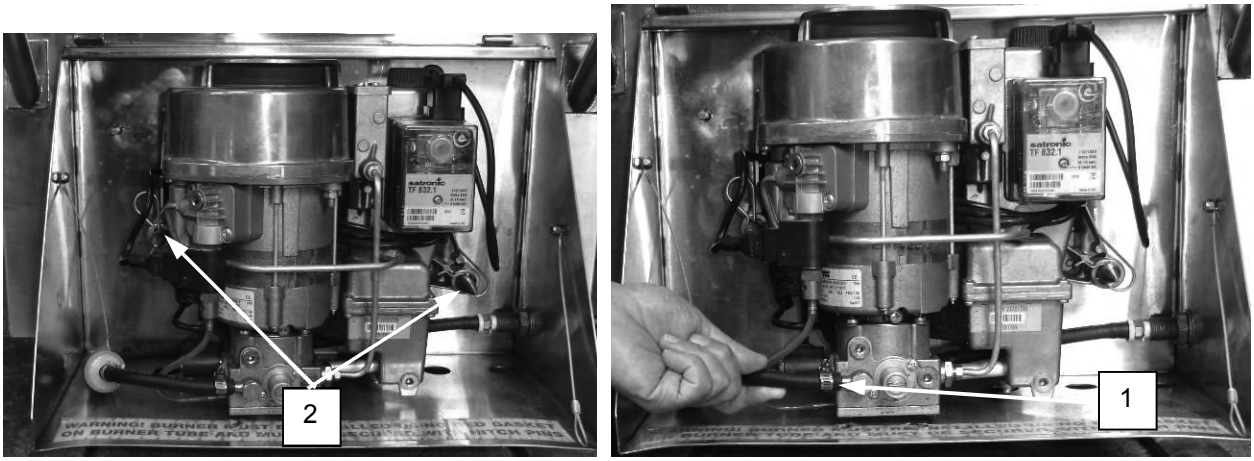


Figure 6. Burner Saddle Pins and Fuel Line Installation.

5. Insert female power cord plug into top of burner control box base and secure it by tightening the screw that is integral to the power plug (Figure 7, Item 1).

6. Align burner cover (Figure 7, Item 2) with hinges and tap cover to the left to install. Swing cover down to cover burner.

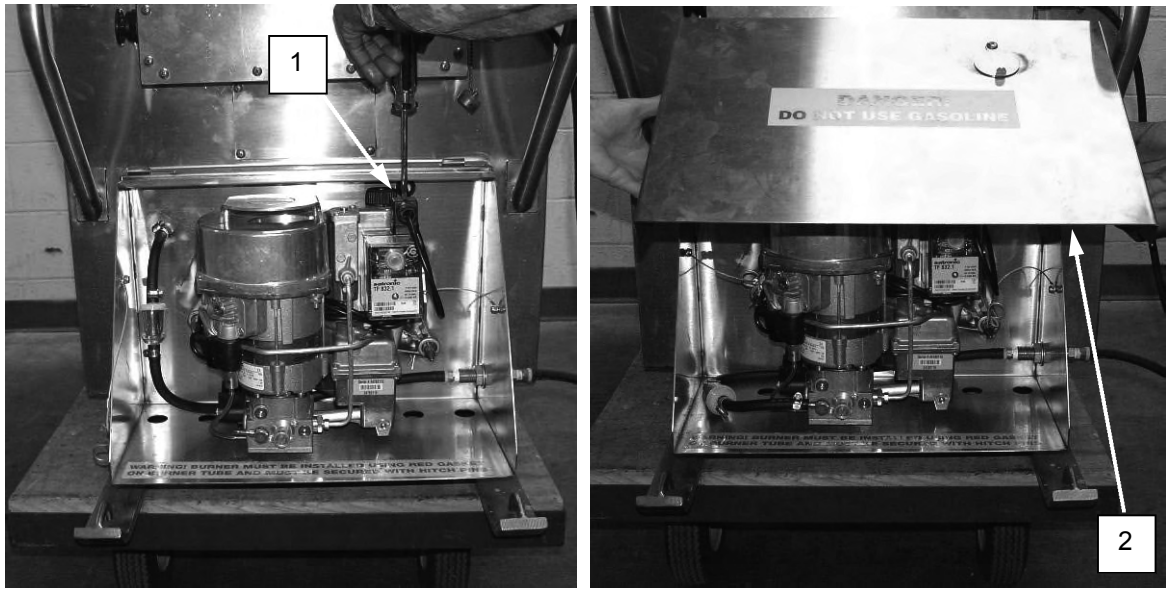


Figure 7. Power Plug Installation.

REPLACE – CONTINUED

WARNING

Do not attempt to connect a fuel line to the TRH in the vicinity of any open flame. Ensure that the fuel hose connections are made properly to avoid fuel spillage. Prevent a possible fire hazard by having absorbent materials or fuel mats on hand to absorb any spillage. Failure to observe safety precautions may result in injury or death to personnel.

7. Connect fuel line (Figure 8, Item 3) from TRH to fuel can using QD fitting (Figure 8, Item 1). Ensure fuel filter (Figure 8, Item 2) is closer to the fuel can than to the TRH.

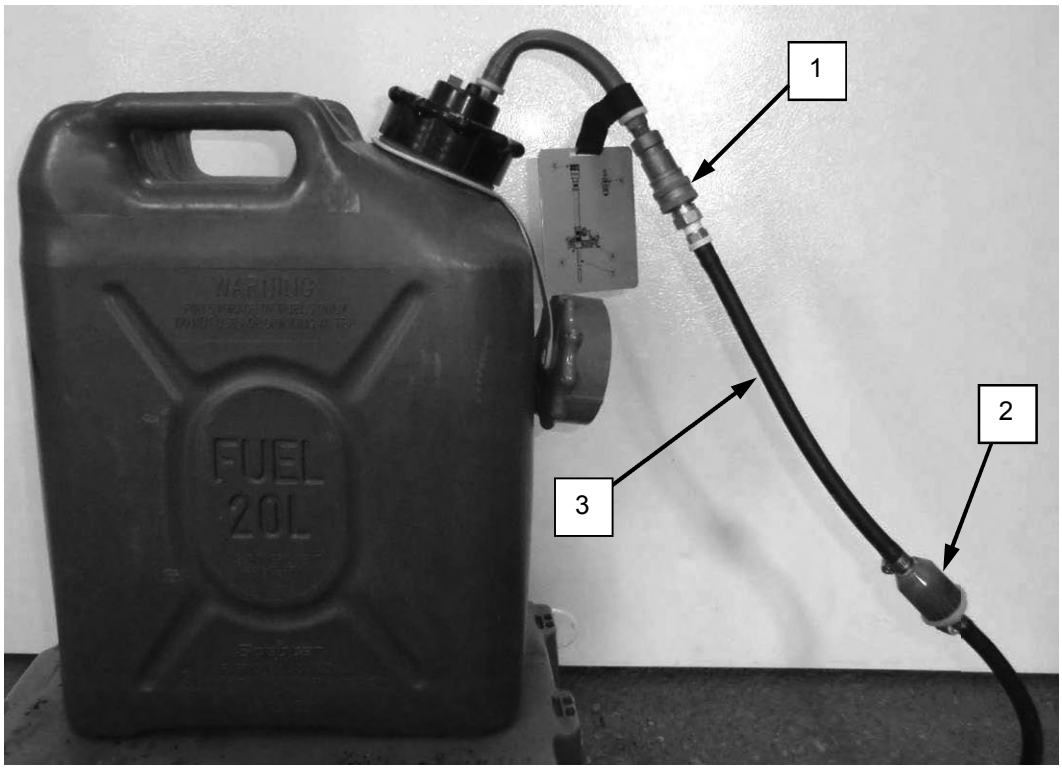


Figure 8. Fuel Line Connection.

REPLACE – CONTINUED

WARNING

HIGH VOLTAGE is used in the operation of this equipment. Never work on electrical components alone. External power should be shut off whenever possible and all maintenance personnel must be familiar with operation and hazards of the equipment. **DEATH ON CONTACT** may result if personnel fail to observe safety precautions

For artificial respiration, refer to FM 21-11.

Do not stand in water while handling live power cords or electrical shock may result. Position all power cables so that they are out of the way during operation and are not in water.

8. Connect TRH power cord to coupling on TRH electrical control box (Figure 9, Item 1) and to power source, for example, the GFCI outlet (Figure 9, Item 2) on the power inverter.

Figure 9. TRH Power Connections.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE

FLAME SAFEGUARD CONTROL REPLACE

INITIAL SETUP:

Tools and Special Tools	Personnel Required
AK Tool Box (WP 0069, Item 3)	Food Service Specialist 92G
References	**Equipment Condition**
WP 0026	TRH Burner Cover Removed (WP 0026)

REPLACE

1. Loosen the flame safeguard control integral retaining screw (Figure 1, Item 1).
2. Remove the flame safeguard control box (Figure 1, Item 2).
3. Replace the flame safeguard control box (Figure 1, Item 2) with serviceable item from stock and tighten the integral retaining screw (Figure 1, Item 1).

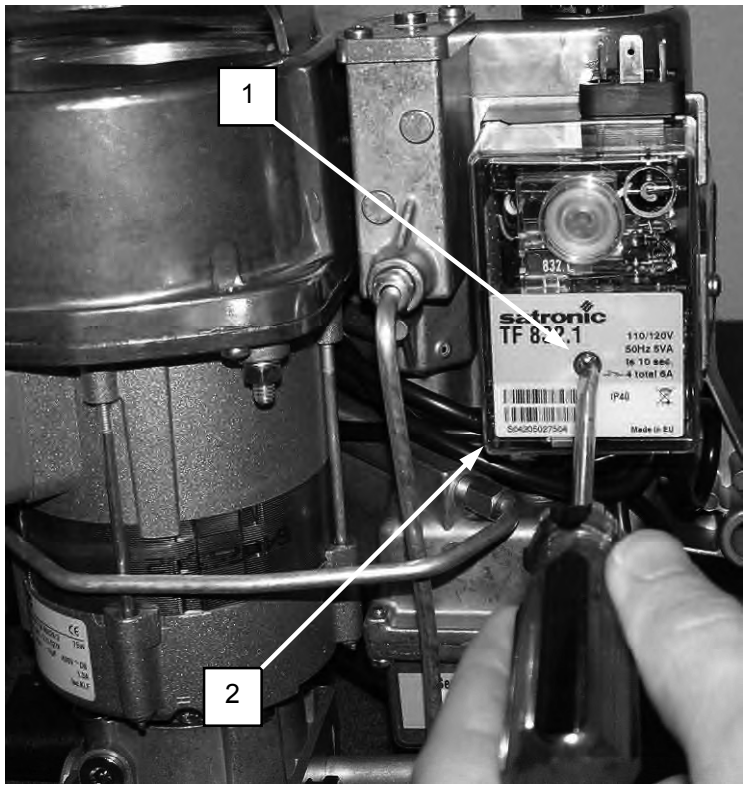


Figure 1. Flame Safeguard Control Replacement.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE

FILTER ELEMENT, AIR INTAKE
REPLACE

INITIAL SETUP:

Tools and Special Tools

AK Tool Box (WP 0069, Item 3)

Personnel Required

Food Service Specialist 92G (1)

Materials/Parts

Oil and Water Absorbent Material (WP 0069, Item 1)

Equipment Condition

Burner removed from TRH tank IAW WP 0026

REPLACE

1. Unscrew and remove compressor machine thread plug (Figure 1, Item 1).

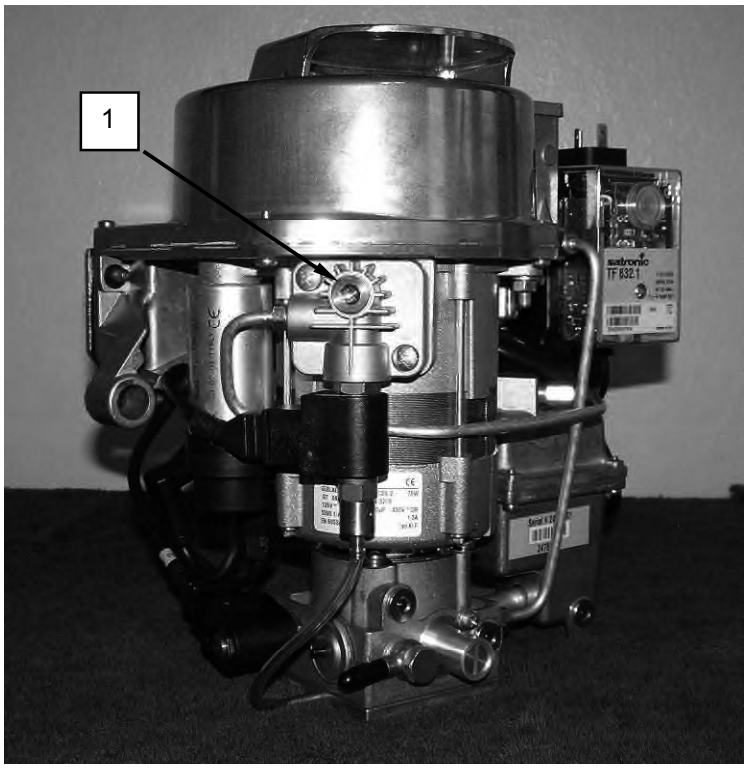


Figure 1. Remove Filter Plug.

REPLACE - CONTINUED

2. Using long nose pliers, remove the compressor intake air filter element (Figure 2, Item 1) and discard.

3. Using long nose pliers, install new filter (Figure 2, Item 1).

Figure 2. Remove Intake Air Filter Element.

4. Install machine thread plug (Figure 3, Item 1) and tighten.

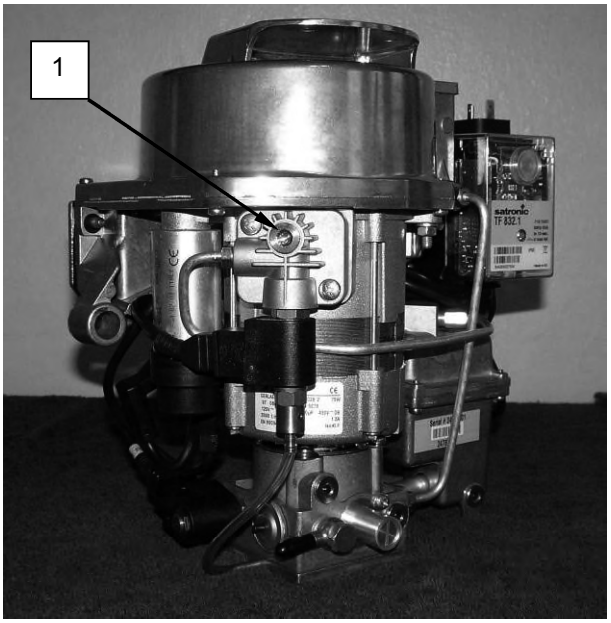


Figure 3. Replace Filter Plug.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE

PHOTO SEMICONDUCTOR DEVICE REPLACE

INITIAL SETUP:

Personnel Required	Equipment Condition
Food Service Specialist 92G (1)	TRH Burner removed from TRH (WP 0026)

REPLACE

1. Remove photocell (Figure 1, Item 1) by pulling straight out from photocell base (Figure 1, Item 3).
2. Remove photocell standoff (Figure 1, Item 2) by sliding off photocell, do not misplace.

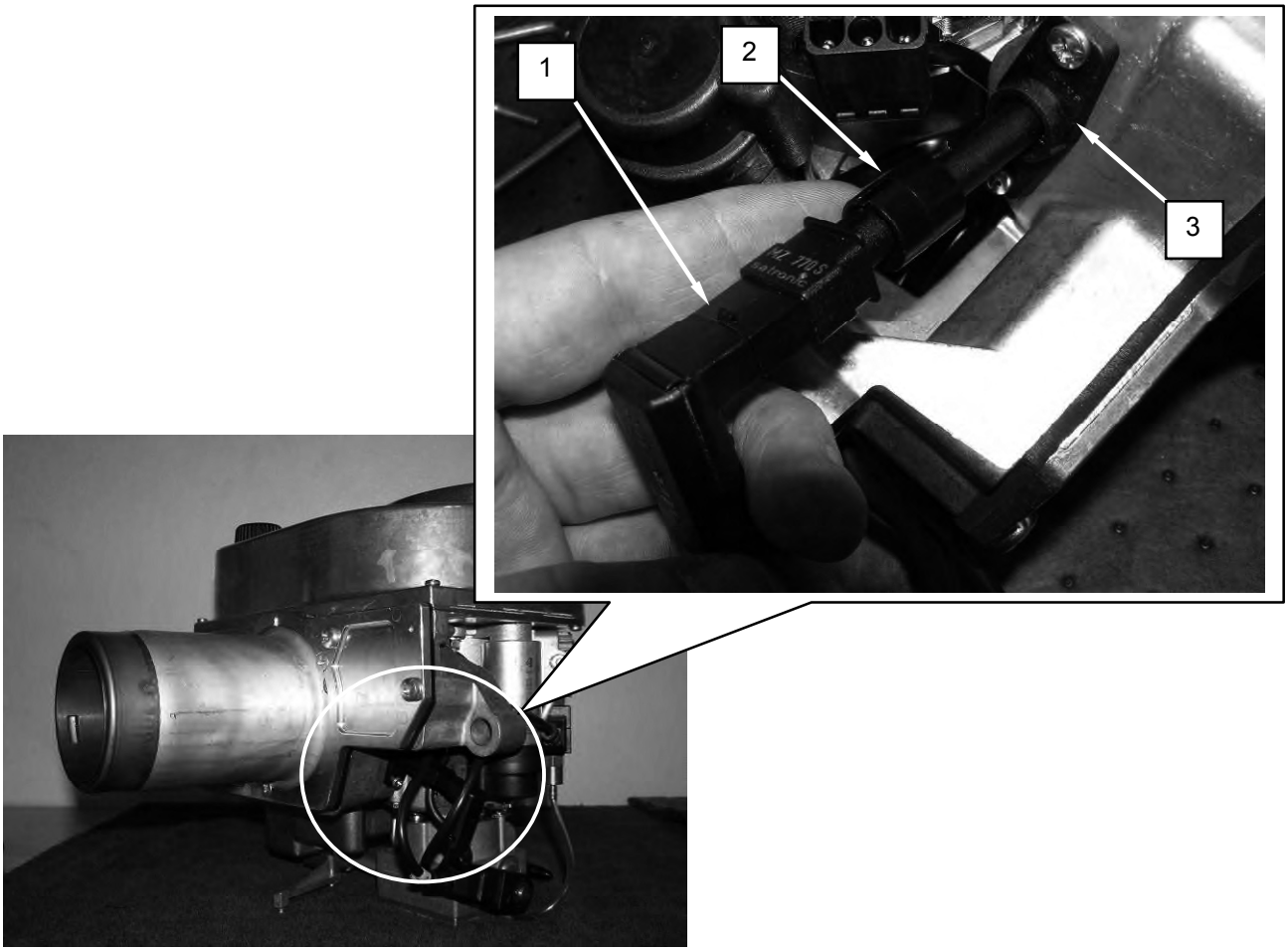


Figure 1. Removing the Photocell.

REPLACE - CONTINUED

3. Disconnect photocell from power cable by pressing down on photocell release (Figure 2, Item 3) and pulling photocell (Figure 2, Item 1) away from photocell power cable (Figure 2, Item 4).

4. Connect new photocell to power cable by pressing down on photocell release (Figure 2, Item 3) and sliding photocell (Figure 2, Item 1) onto photocell power cable (Figure 2, Item 4). Ensure light detector (Figure 2, Item 5) on photocell is pointing away from the photocell power cable (Figure 2, Item 4).

5. Slide photocell standoff (Figure 2, Item 2) over new photocell. Align tab on photocell standoff with notch on photocell.

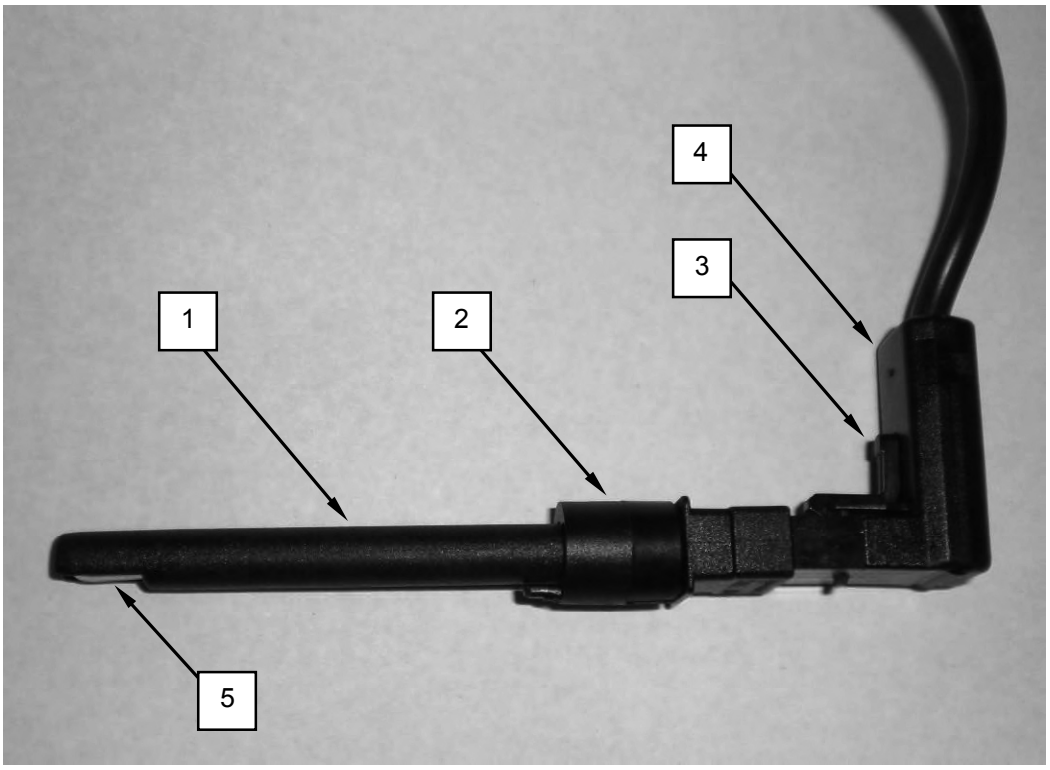


Figure 2. Photocell to Power Cable Connection.

REPLACE – CONTINUED

6. Insert photocell (Figure 3, Item 2) into TRH burner by sliding into photocell base (Figure 3, Item 3), aligning tab on photocell standoff with notch on photocell base at 9 o'clock position, and orienting so that the light detector window of the photocell is facing the TRH burner flame tube (Figure 3, Item 1) as shown in Figure 3.

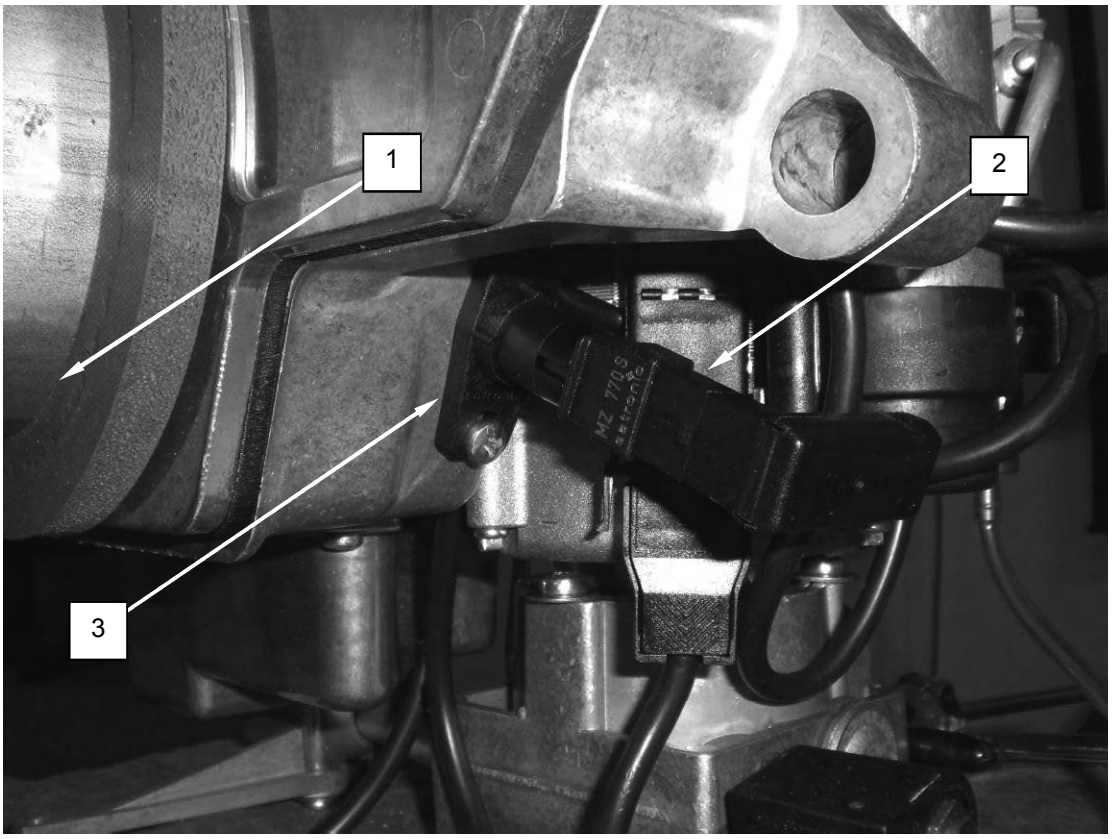


Figure 3. Photocell Orientation.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE

FOOD AND BEVERAGE CONTAINERS REPAIR

INITIAL SETUP:

Tools and Special Tools	Personnel Required
AK Tool Box (WP 0069, Item 3)	Food Service Specialist 92G (1)

REPAIR

Repair procedures in this WP apply to any AK food service container that uses screws as attaching hardware only. Older style containers may be encountered with rivets as attaching hardware. Any AK food service container requiring repair that has rivets as attaching hardware will be referred to the next higher level of maintenance for repair.

Vent Cap Replacement

This procedure covers replacement of unserviceable vent caps for the Insulated Beverage Dispenser, IFC, and SLPC.

NOTE

SLPC is depicted in Figure 1. Replacement procedures for IFC and IBC are the same.

1. Pull vent cap (Figure 8, Item 1) away from SLPC door by hand.
2. Align the replacement cap (Figure 8, Item 1) and press fit to container by hand.

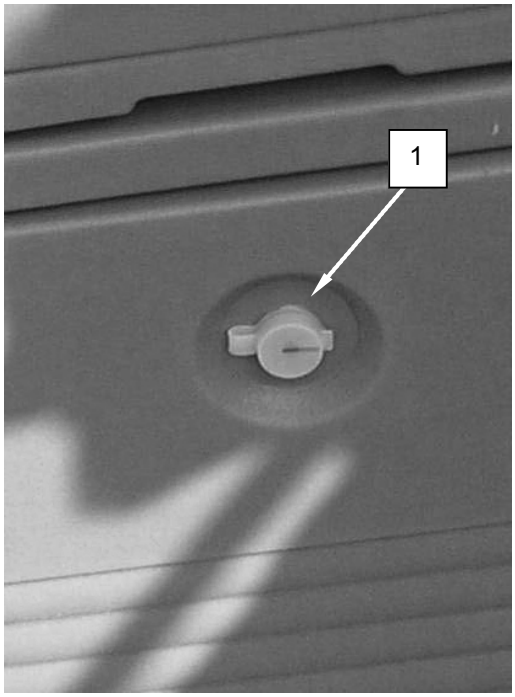


Figure 1. Vent Cap Replacement.

REPAIR - CONTINUED

Insulated Beverage Dispensers Repair

Repair of the Insulated Beverage Dispenser will consist of replacement of an unserviceable lid gasket, latch assembly, vent cap, or faucet and spout assembly.

Lid Gasket Replacement.

1. Remove the lid (Figure 2, Item 2) from the beverage dispenser (Figure 2, Item 1).
2. Pull the lid gasket (Figure 2, Item 3) off the lid by hand.
3. Align the replacement gasket (Figure 2, Item 3) and press fit to lid by hand.

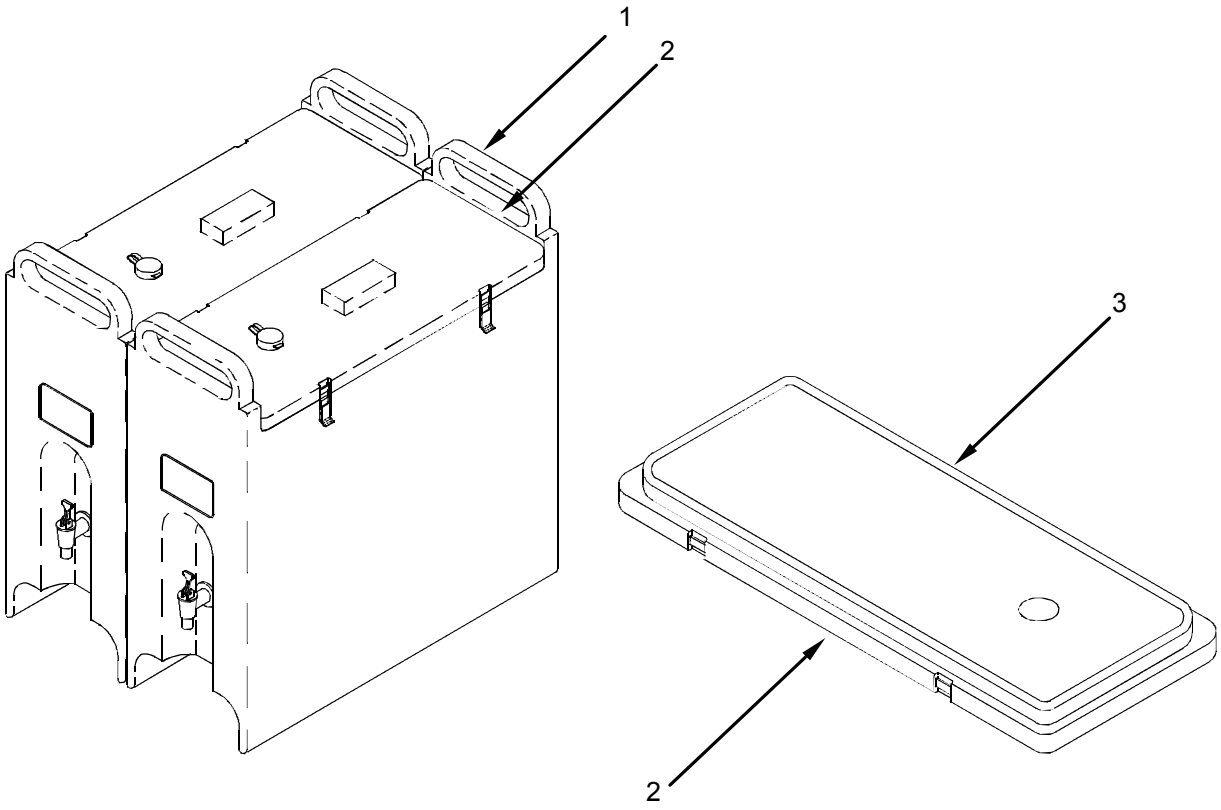


Figure 2. Insulated Beverage Dispenser.

END OF TASK

REPAIR - CONTINUED

Latch Assembly Replacement.

1. Remove two screws (Figure 3, Item 2) from the dispenser lid latch assembly (Figure 3, Item 1).

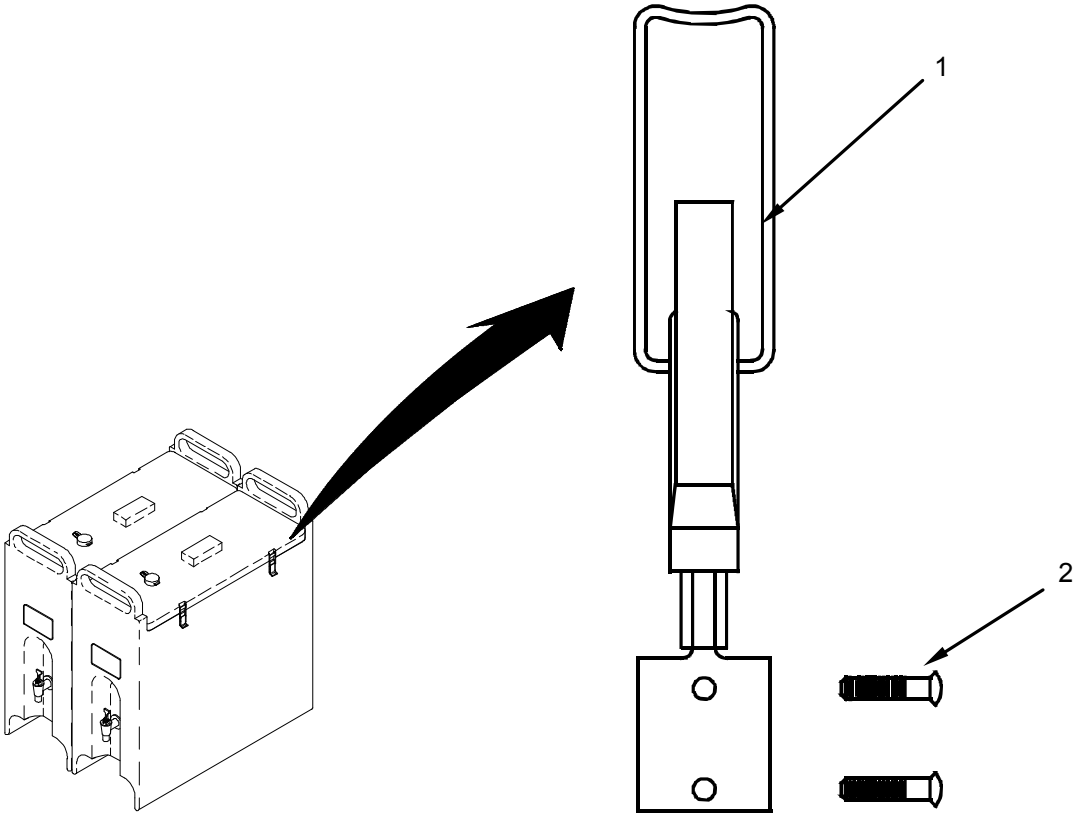


Figure 3. Beverage Dispenser Lid Latch.

2. Remove latch assembly (Figure 3, Item 1) from dispenser.
3. Align replacement lid latch (Figure 3, Item 1) with two holes in dispenser.
4. Install and tighten two screws (Figure 3, Item 2) to secure lid latch (Figure 3, Item 1) to dispenser.

END OF TASK

REPAIR – CONTINUED

Faucet and Spout Assembly Replacement.

1. Loosen the wing nut (Figure 4, Item 4) and remove the faucet (Figure 4, Item 8) from the spout (Figure 4, Item 1).
2. Loosen cap (Figure 4, Item 6) from top of faucet (Figure 4, Item 8) and remove silicone rubber seal cup (Figure 4, Item 7).
3. Remove “C” nut (Figure 4, Item 5) and wing nut (Figure 4, Item 4) from spout (Figure 4, Item 1).
4. Remove hex nut (Figure 4, Item 3), spout (Figure 4, Item 1), and O-ring (Figure 4, Item 2).

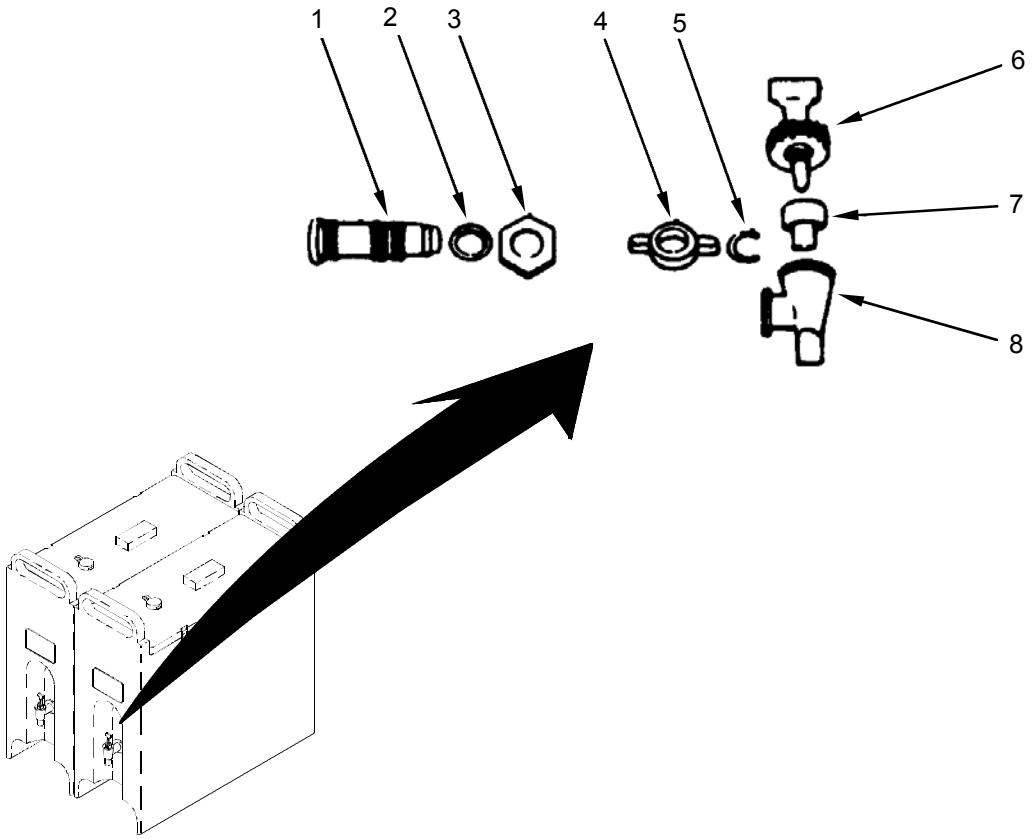


Figure 4. Dispenser Faucet and Spout Assembly.

5. Install spout (Figure 4, Item 1) and O-ring (Figure 4, Item 2) from the inside through dispenser wall.
6. Install hex nut (Figure 4, Item 3) and tighten.
7. Install wing nut (Figure 4, Item 4) and “C” nut (Figure 4, Item 5).
8. Install silicone rubber seal cup (Figure 4, Item 7) and install top on faucet (Figure 4, Item 8) and tighten.
9. Install faucet (Figure 4, Item 8) to the spout (Figure 4, Item 1) and tighten wing nut (Figure 4, Item 4).

END OF TASK

REPAIR – CONTINUED

Side Loading Pan Carrier Repair

Repair of the Side Loading Pan Carrier consists of replacement of the door gasket, hinge door, or vent cap.

Door Gasket Replacement.

1. Open the door of the SLPC.
2. Pull the lid gasket (Figure 5, Item 1) off the door by hand.
3. Align the replacement gasket (Figure 5, Item 1) and press fit to door by hand.

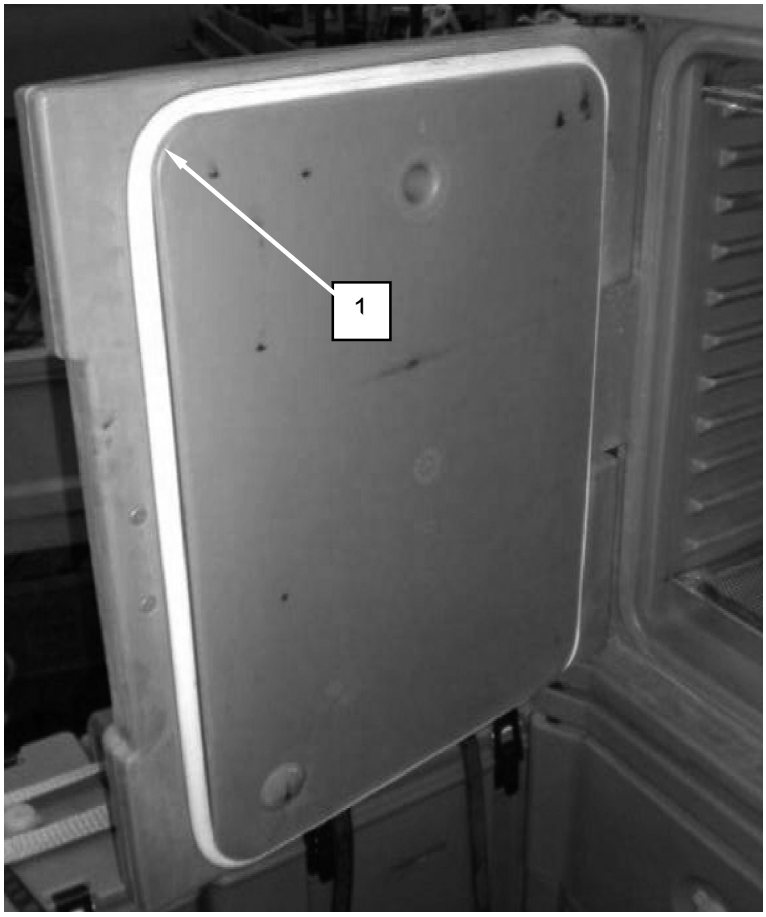


Figure 5. SLPC Door Gasket Replacement.

END OF TASK

REPAIR – CONTINUED

Hinge Replacement.

1. Open the door of the SLPC.
2. Remove the five screws from the hinge (Figure 6, Item 1) and set aside screws.
3. Remove the hinge (Figure 6, Item 1).
4. Align the replacement hinge (Figure 6, Item 1) to the SLPC and secure hinge with five screws.

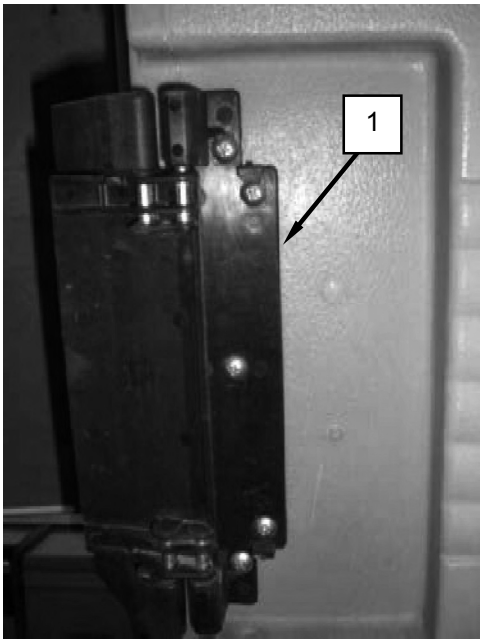


Figure 6. SLPC Hinge Replacement.

END OF TASK

REPAIR – CONTINUED

Door Replacement.

1. Open the door of the SLPC.
2. Remove the door pin retainer (Figure 7, Item 1) by prying pin downward and rotating away from locking tab retainer on SLPC body.
3. When the door pin retainer (Figure 7, Item 1) is exposed, pull it away from the door pin by hand and set aside.
4. Slide door pin (Figure 7, Item 2) straight out of door and set aside.
5. Repeat steps 2, through 4, for opposite end of door.
6. Align replacement door and secure to SLPC by replacing door pins (Figure 7, Item 2) and retainers (Figure 7, Item 1) on top and bottom of door.

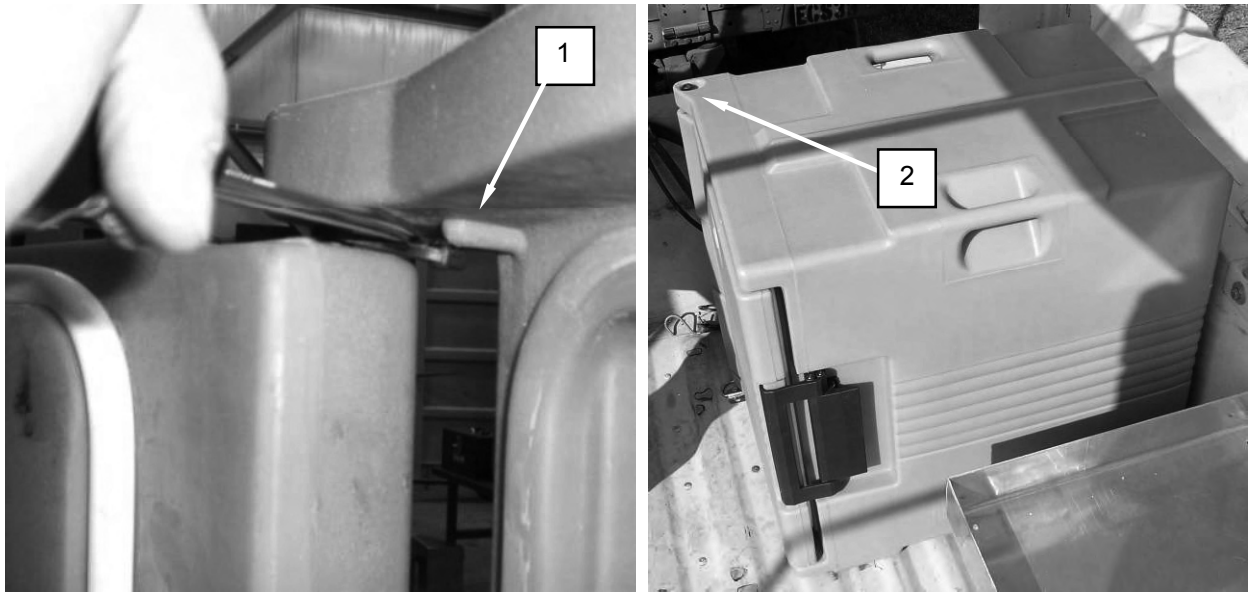


Figure 7. SLPC Door Replacement.

END OF TASK

REPAIR – CONTINUED

Insulated Food Carrier Repair

Repair of the Insulated Food Carrier consists of replacing the hinges.

Hinge Replacement.

1. Remove the lid (Figure 8, Item 1) from the IFC (Figure 8, Item 3).
2. Remove the three screws from the hinge (Figure 8, Item 2) and set aside screws.
3. Remove the hinge (Figure 8, Item 2).
4. Align the replacement hinge (Figure 8, Item 2) to the IFC, and secure with three screws.

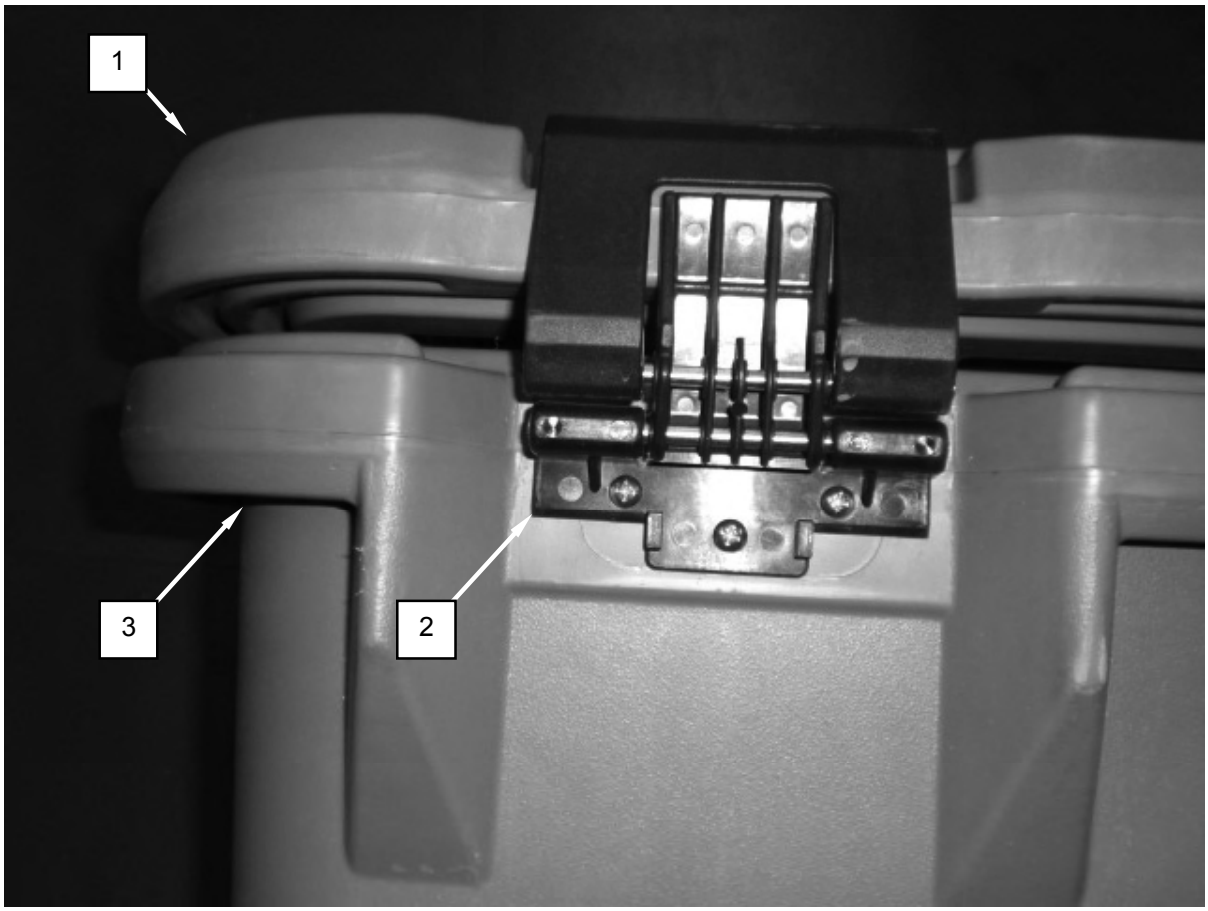


Figure 8. IFC Hinge Replacement.

END OF TASK

REPAIR – CONTINUED

Ice Storage Chest Repair

Repair of the Ice Storage Chest consists of replacing the stationary lid or faucet drain assembly.

Lid Replacement.

1. Remove the stationary lid (Figure 9, Item 1) by loosening four thumb screws (Figure 9, Item 2) and lifting stationary lid away from ice chest (Figure 9, Item 3).

2. Align replacement stationary lid (Figure 9, Item 1) and secure to ice chest (Figure 9, Item 3) with thumb screws (Figure 9, Item 2).

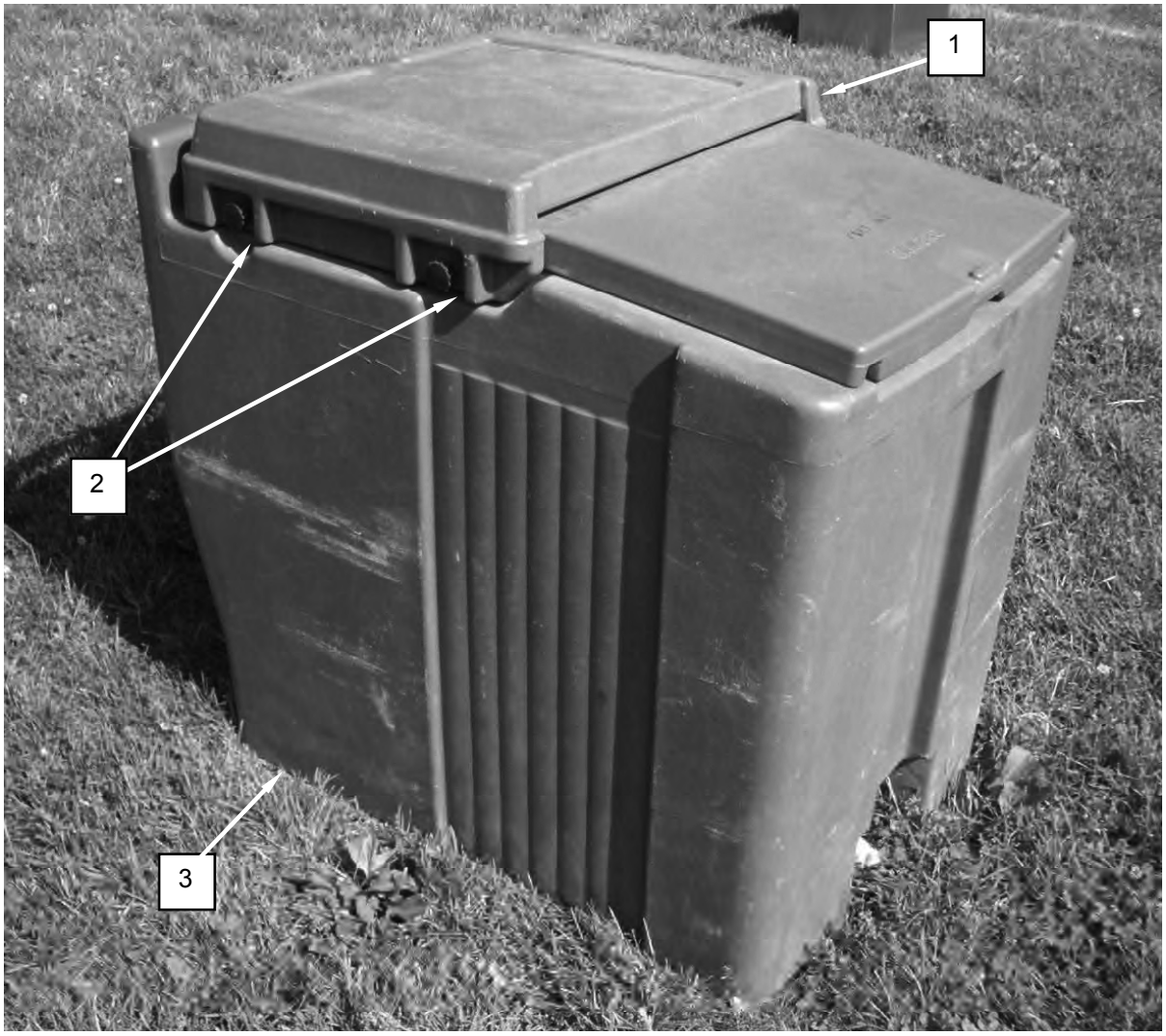


Figure 9. Ice Chest Lid Replacement.

END OF TASK

REPAIR – CONTINUED

Faucet Drain Assembly Replacement.

1. Loosen the nut (Figure 10, Item 1) and remove the faucet drain assembly (Figure 10, Item 2) from the ice chest (Figure 10, Item 3).

2. Align replacement drain assembly (Figure 10, Item 2) to ice chest (Figure 10, Item 3) and secure with nut (Figure 10, Item 1).

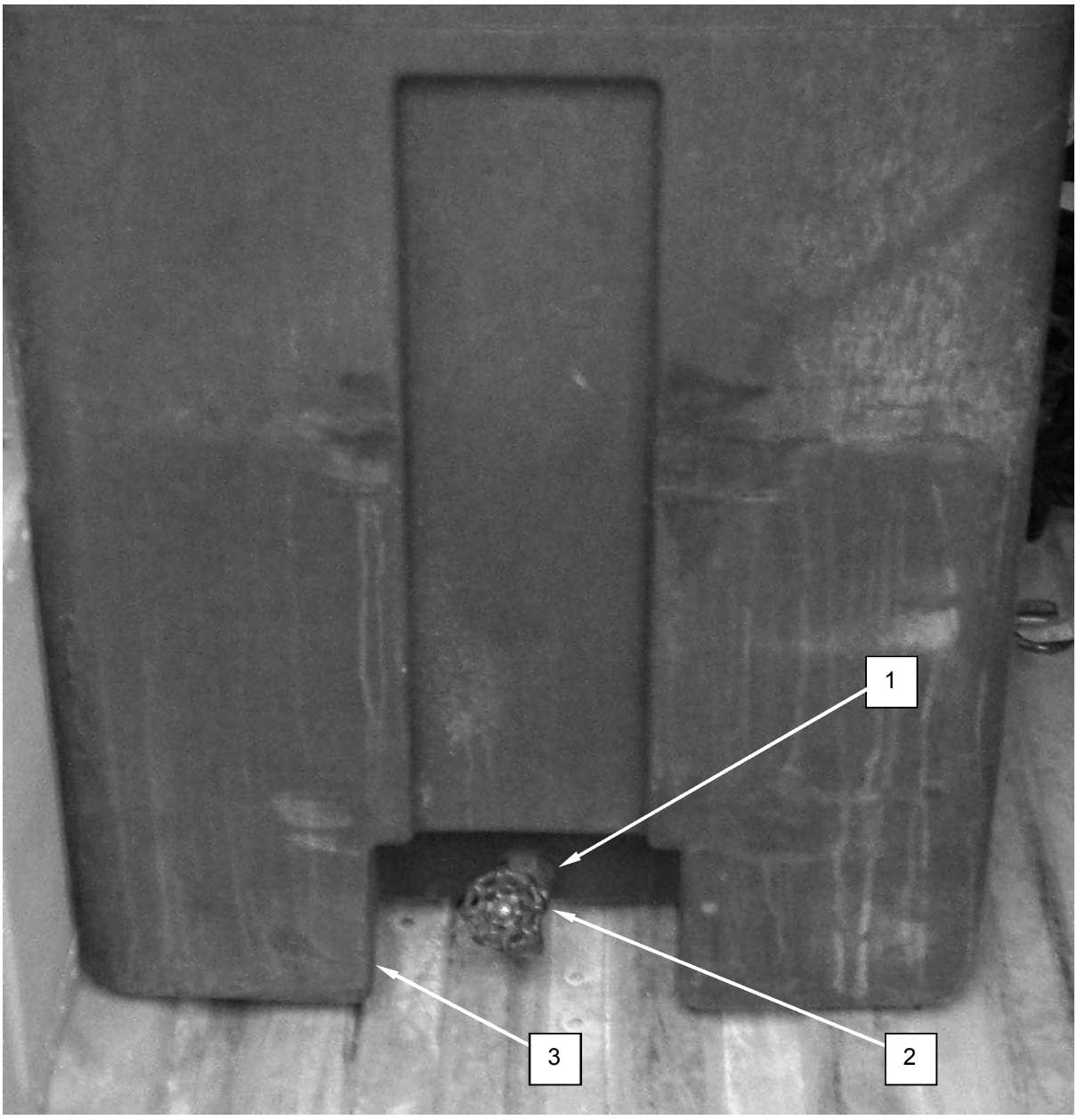


Figure 10. Ice Chest Repair.

END OF TASK

END OF WORK PACKAGE

CHAPTER 6

MAINTAINER MAINTENANCE INSTRUCTIONS FOR ASSAULT KITCHEN

FIELD MAINTENANCE

TOGGLE SWITCH
REPLACE

INITIAL SETUP:

Tools and Special Tools	**Personnel Required**
Tool Kit, GMTK (WP 0069, Item 4)	Quartermaster Equipment Repairer 91J (1)
Materials/Parts	**Equipment Condition**
Activated Desiccant (WP 0069, Item 5)	Power disconnected from TRH

REPLACE

1. Remove primary TRH electrical control panel cover (Figure 1, Item 1) by removing 10 screws. Retain screws.

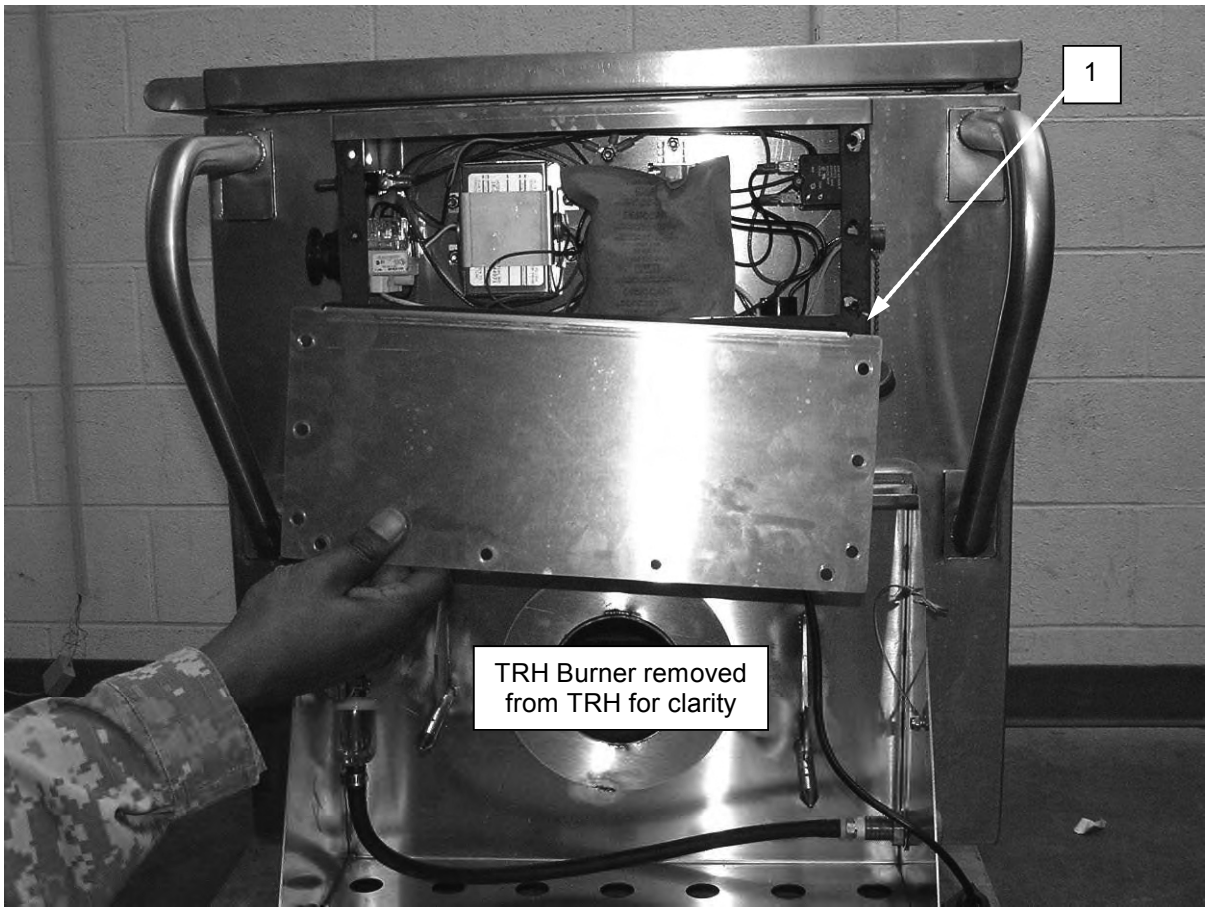


Figure 1. Access Cover Removal.

REPLACE - CONTINUED

2. Remove toggle switch retaining nut (Figure 2, Item 1) and rubber boot.

NOTE

Prior to removing switch, note proper orientation for reinstallation.

3. Remove toggle switch from control box.

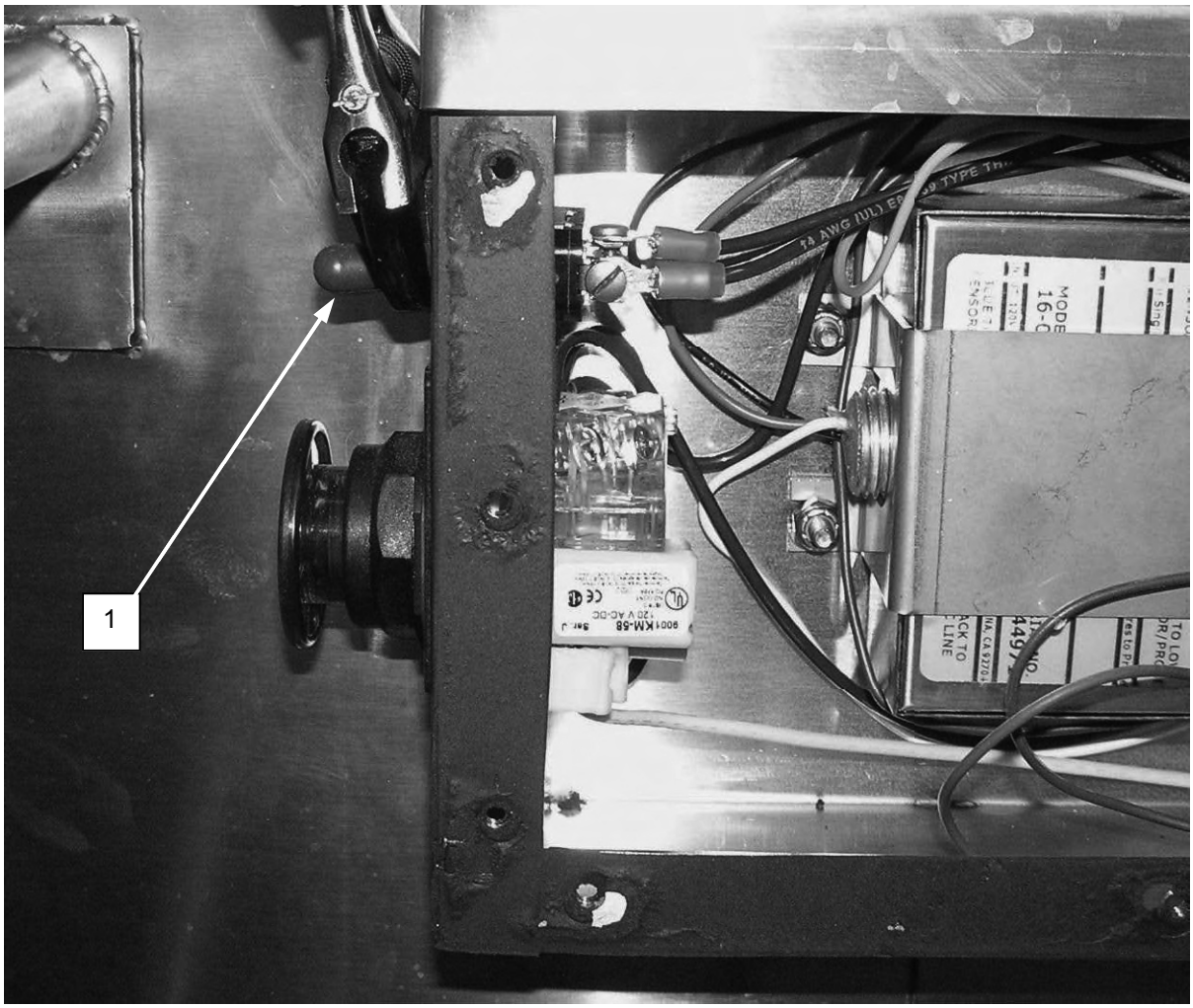


Figure 2. Toggle Switch Removal.

REPLACE – CONTINUED

CAUTION

Failure to ensure proper wire connection could result in improper equipment indications.

4. Transfer wires one at a time, from the terminals on the defective toggle switch (Figure 3, Item 1) to the terminals (Figure 3, Item 2) on the replacement toggle switch, being careful to maintain proper wire connectivity.

5. Install replacement toggle switch (Figure 3, Item 1), retaining nut, and rubber boot.

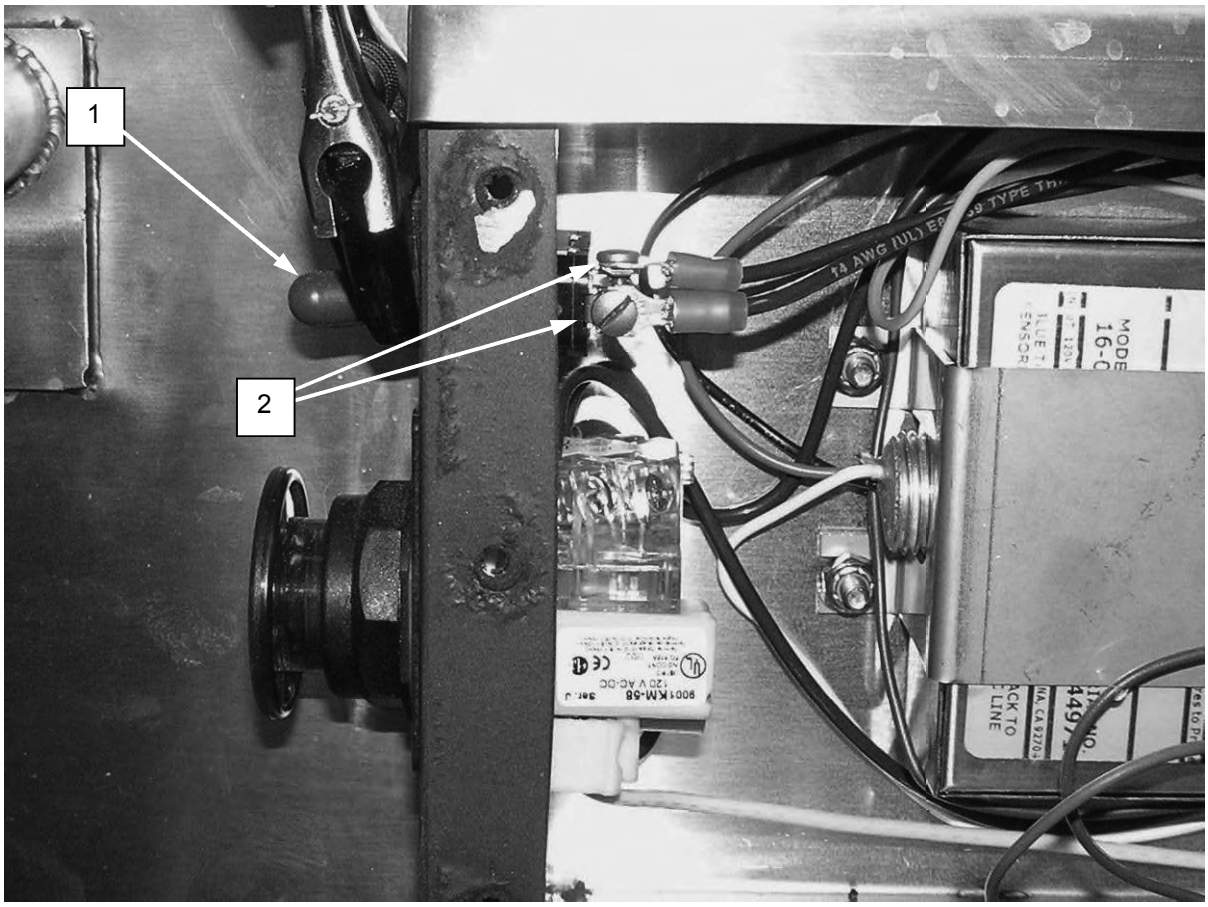


Figure 3. Toggle Switch Replacement.

REPLACE – CONTINUED

NOTE

The desiccant bag is used to protect electrical components by absorbing moisture. If moisture is present in electrical control panel, the desiccant has become saturated and needs replacing. Replace with a new desiccant bag.

6. Replace desiccant bag (Figure 4, Item 1).

7. Install primary control panel access cover (Figure 4, Item 2).

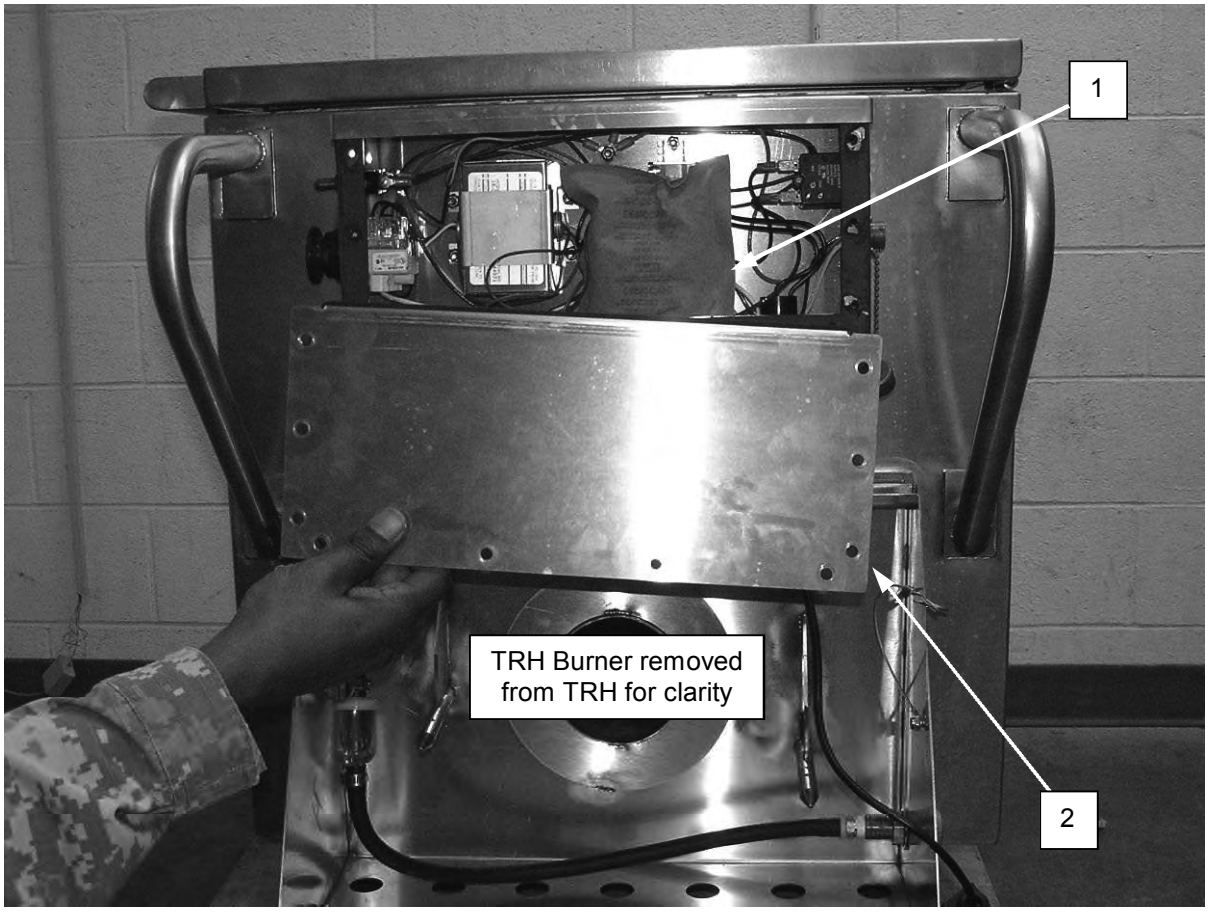


Figure 4. Access Cover Replacement.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

LIGHT SWITCH, PUSH-PULL
REPAIR, REPLACE

INITIAL SETUP:

Tools and Special Tools	**Personnel Required**
Tool Kit, GMTK (WP 0069, Item 4)	Quartermaster Equipment Repairer 91J (1)
Materials/Parts	**Equipment Condition**
Activated Desiccant (WP 0069, Item 5)	TRH Burner removed from TRH (WP 0026) Power disconnected from TRH

REPAIR

Repair of 120 V push-pull light switch will consist of replacing a defective light bulb.

1. Unscrew red push-pull light switch control knob cover (Figure 1, Item 1).

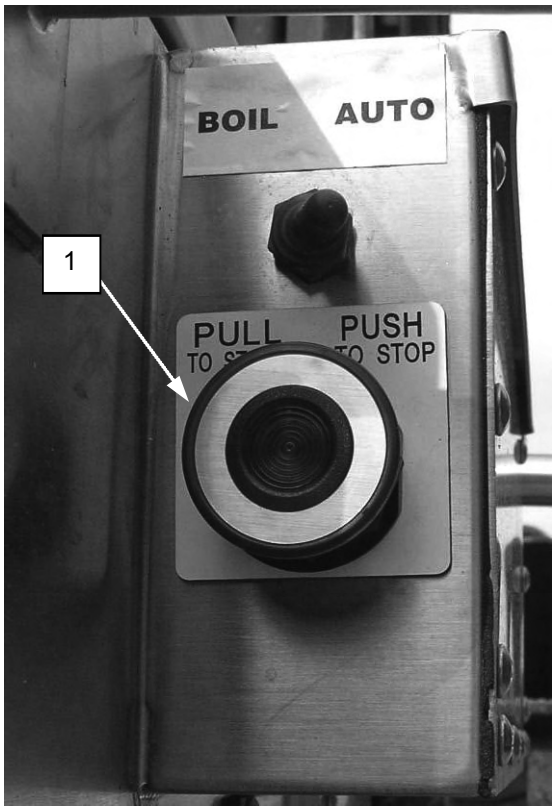


Figure 1. Pull-On/Push-Off Switch.

REPAIR - CONTINUED

2. Push and twist light bulb (Figure 2, Item 2) with thumb and forefinger 1/8-turn clockwise or until bulb pops out.

3. Insert new light bulb (Figure 2, Item 2) into socket (Figure 2, Item 1) and push and turn until seated.

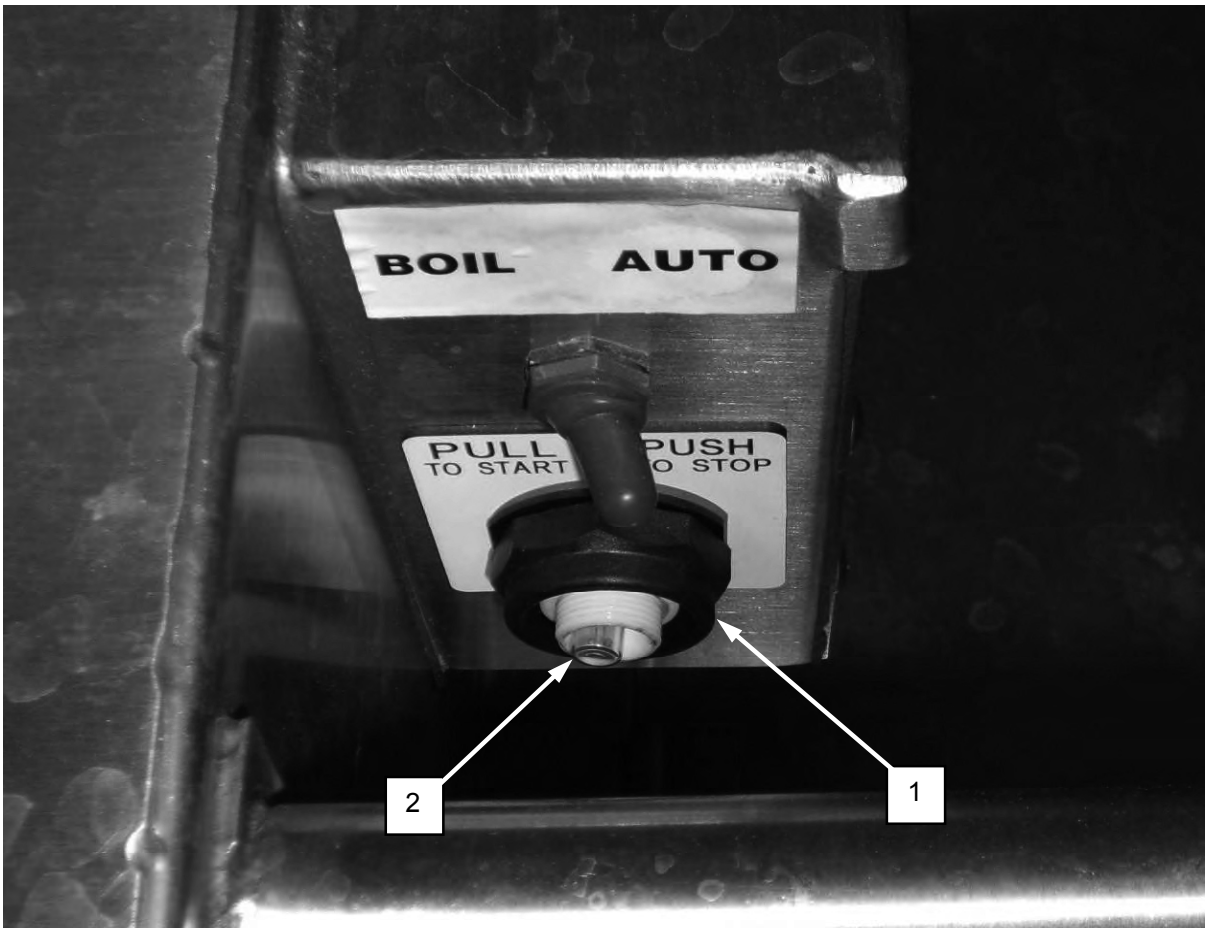


Figure 2. Pull-On/Push-Off Switch Bulb Replace.

4. Screw on red push-pull light switch control knob cover.

END OF TASK

REPLACE

1. Remove primary TRH electrical control panel cover (Figure 3, Item 1) by removing 10 screws. Retain screws.

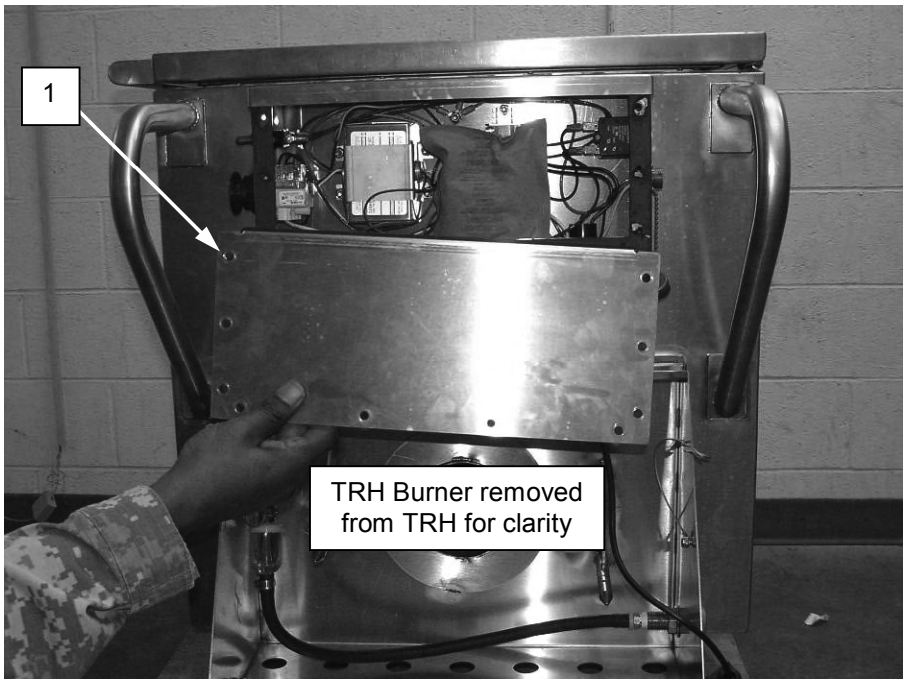


Figure 3. Access Cover Removal.

2. Unscrew red push-pull light switch control knob cover and remove.

3. Remove push-pull light switch retaining nut and plastic spacers.

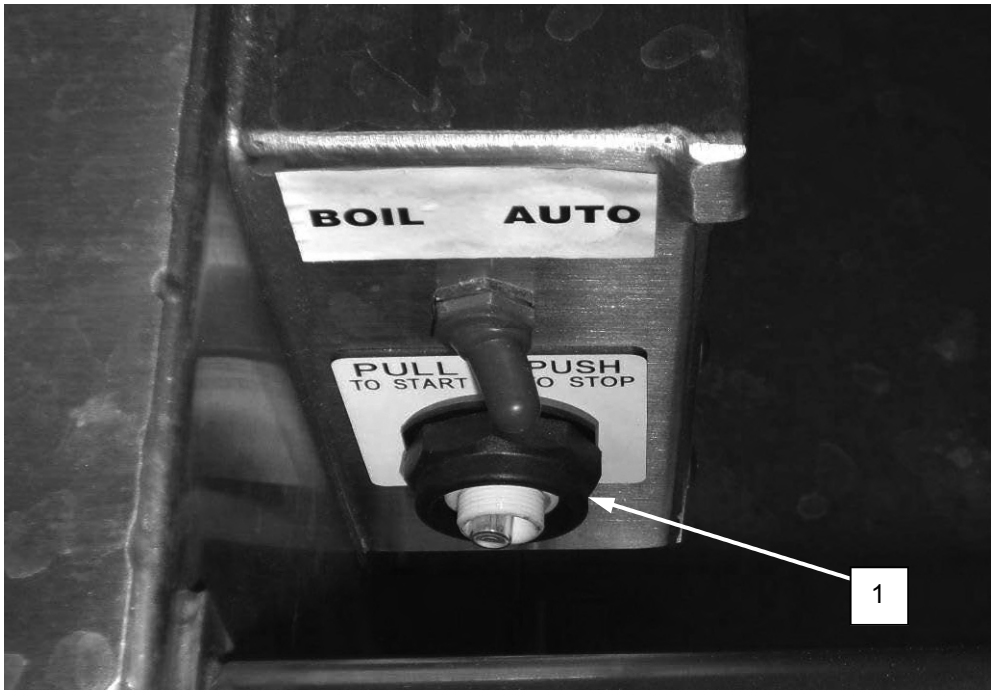


Figure 4. Pull-On/Push-Off Light Switch Retaining Nut.

REPLACE – CONTINUED

4. Remove push-pull light switch from control box and retain indicator plate.
5. Transfer wires one at a time, from the terminals on the defective switch, to the terminals on the replacement switch (Figure 5, Item 1).
6. Install replacement switch in control box.
7. Install indicator control plate, plastic spacers, and retaining nut.
8. Screw on red push-pull light switch control knob cover.

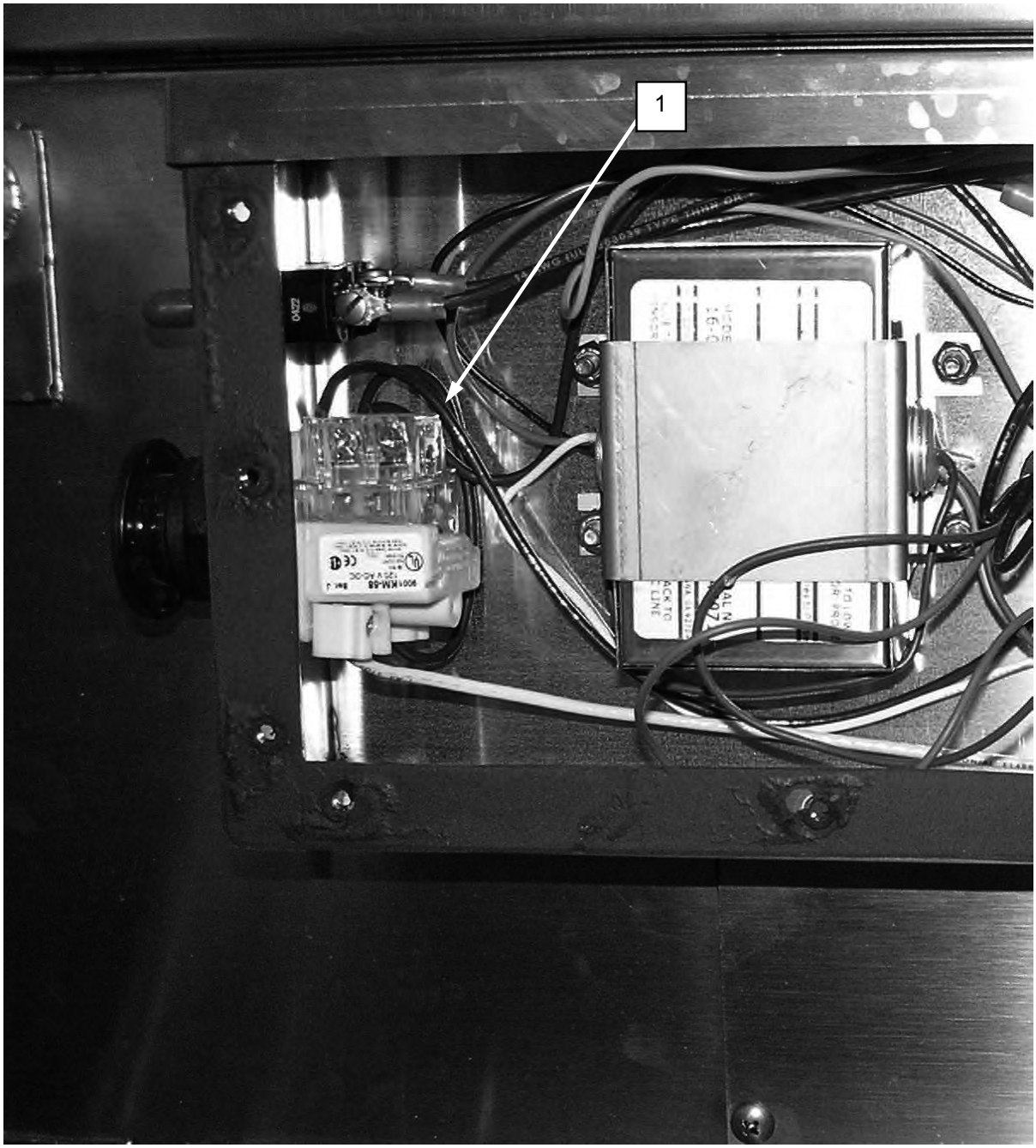


Figure 5. Pull-On/Push-Off Switch Replacement.

REPLACE - CONTINUED

NOTE

The desiccant bag is used to protect electrical components by absorbing moisture. If moisture is present in electrical control panel, the desiccant has become saturated and needs replacing. Replace with a new desiccant bag, if required.

9. Ensure desiccant bag (Figure 6, Item 1) is in place inside control panel before replacing control panel cover.

10. Install control panel cover (Figure 6, Item 2), and retain with screws

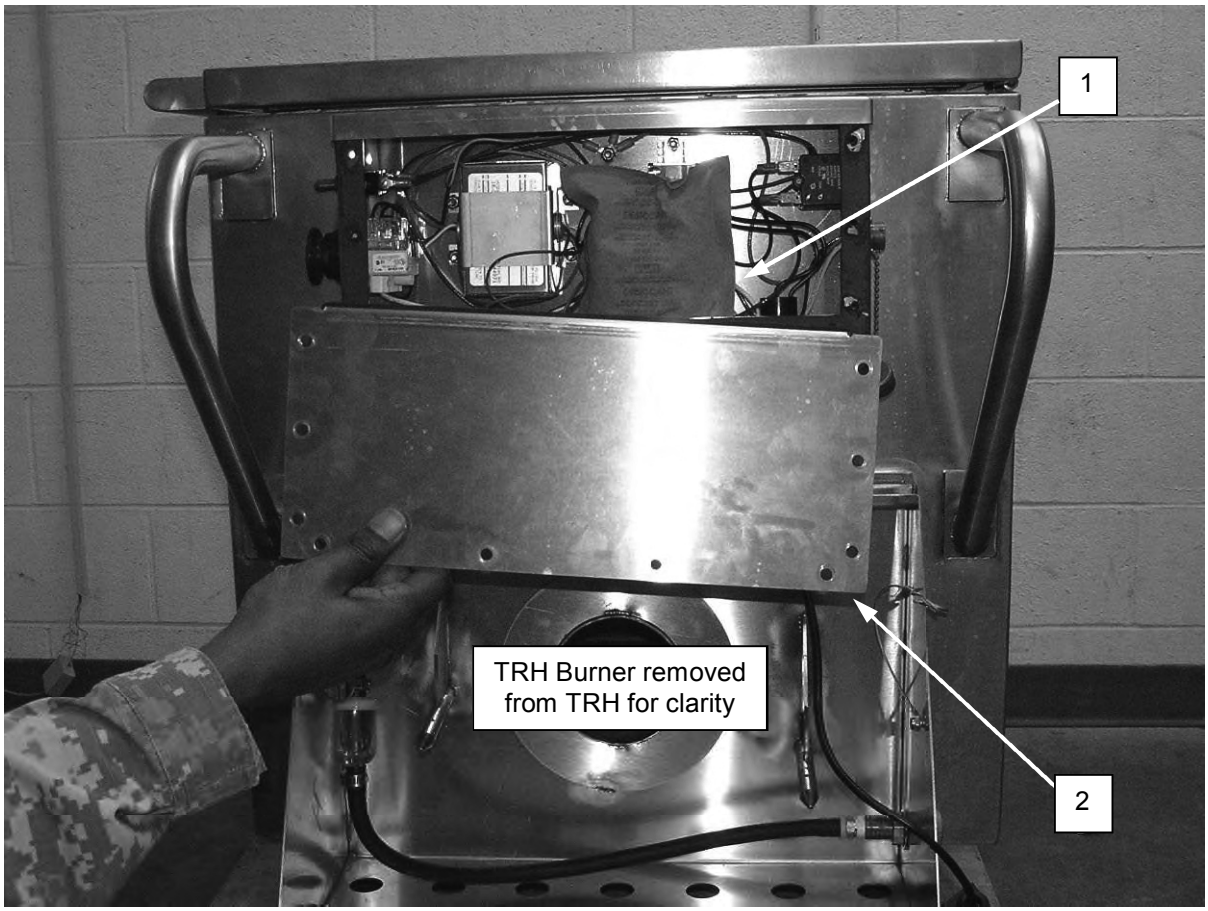


Figure 6. Access Cover Replacement.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

CIRCUIT BREAKER
REPLACE

INITIAL SETUP:

Tools and Special Tools	**Personnel Required**
Tool Kit, GMTK (WP 0069, Item 4)	Quartermaster Equipment Repairer 91J (1)
Materials/Parts	**Equipment Condition**
Activated Desiccant (WP 0069, Item 5)	Power disconnected from TRH

REPLACE

1. Remove primary TRH electrical control panel cover (Figure 1, Item 1) by removing 10 screws. Retain screws. Remove desiccant bag (Figure 1, Item 2).

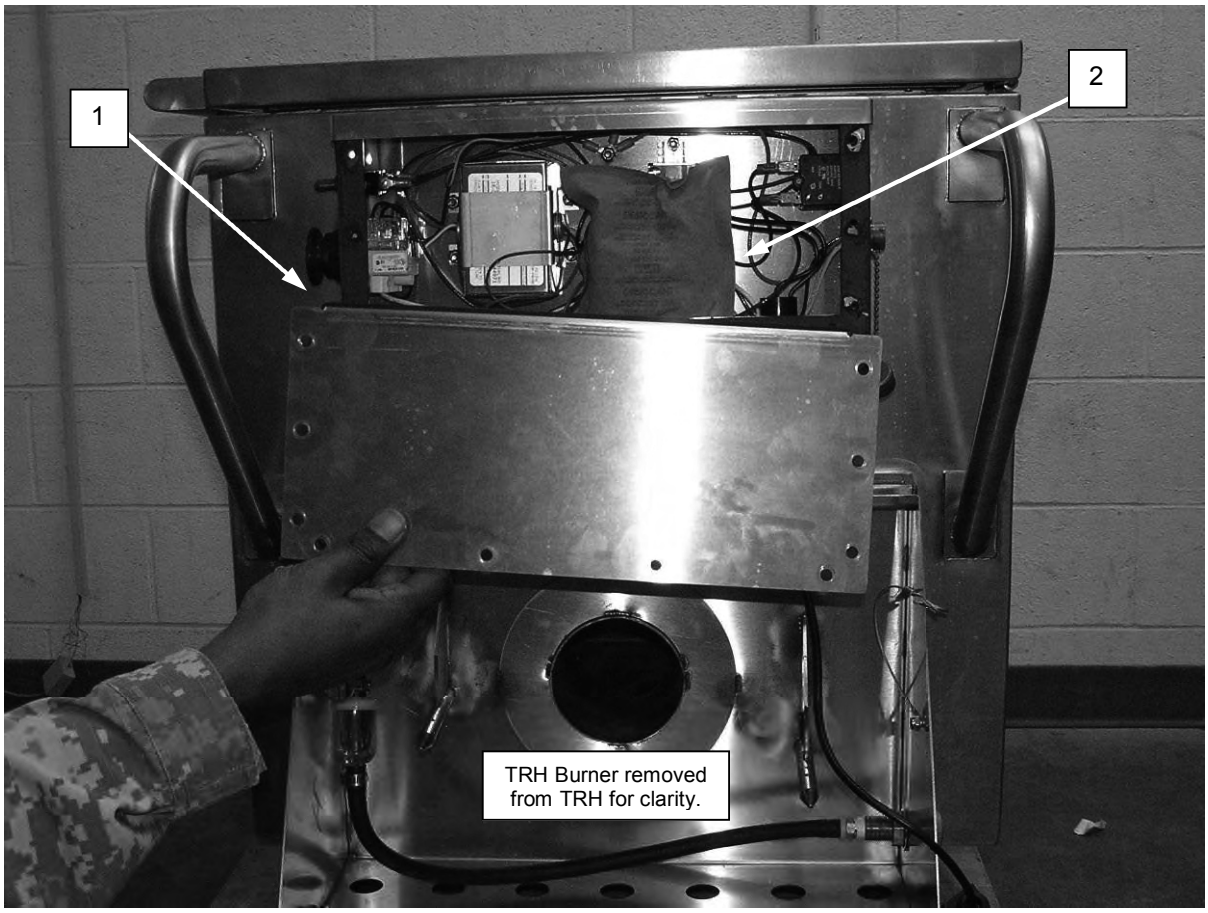


Figure 1. Access Cover Removal.

REPLACE - CONTINUED

2. Remove 5-amp circuit breaker reset switch retaining nut (Figure 2, Item 1).

3. Remove circuit breaker (Figure 2, Item 2).

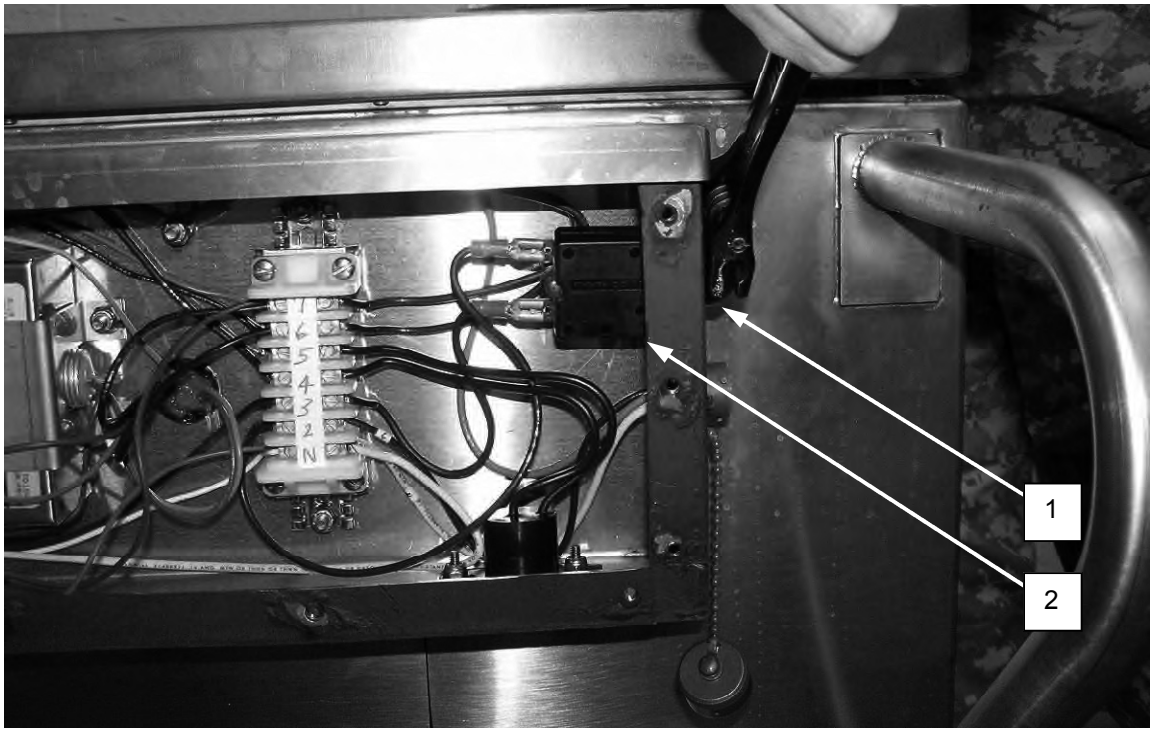


Figure 2. Circuit Breaker Removal.

4. One at a time, remove spade connectors (Figure 3, Item 1) from defective circuit breaker (Figure 3, Item 2) and install on replacement circuit breaker.

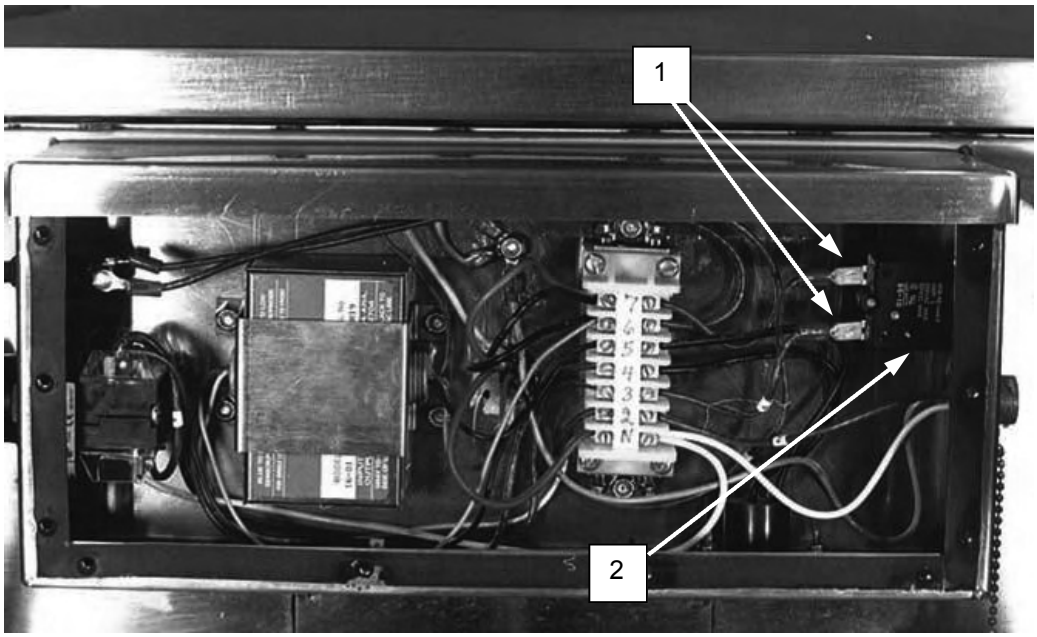


Figure 3. Removing Circuit Breaker Reset Switch.

REPLACE – CONTINUED

5. Install replacement circuit breaker (Figure 4, Item 1) and reinstall retaining nut (Figure 4, Item 2).

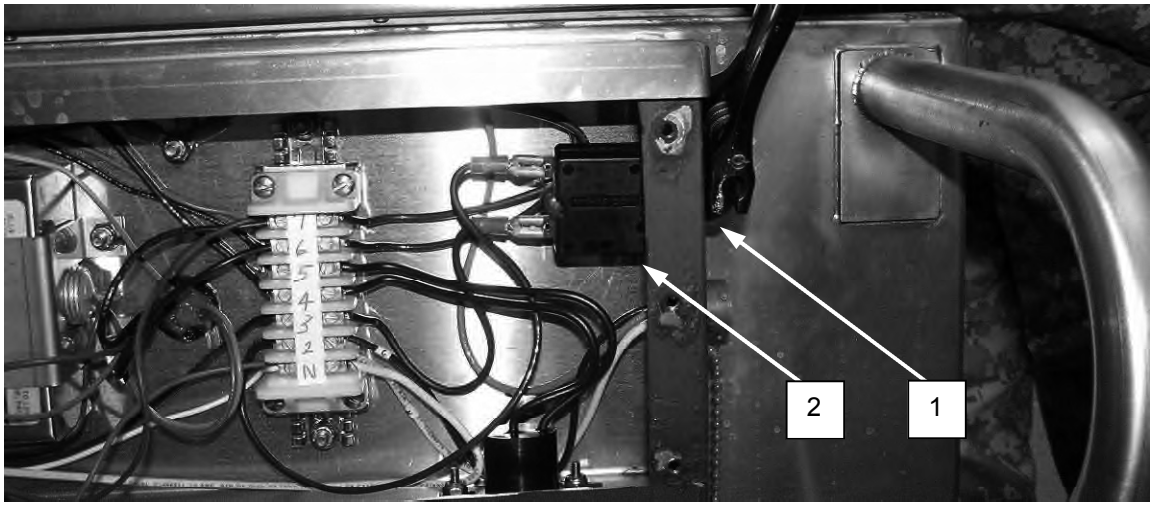


Figure 4. Circuit Breaker Removal.

NOTE

The desiccant bag is used to protect electrical components by absorbing moisture. If moisture is present in electrical control panel, the desiccant has become saturated and needs replacing. Replace with a new desiccant bag.

6. Ensure desiccant bag (Figure 5, Item 1) is in place inside control panel before replacing control panel cover (Figure 5, Item 2).

7. Install primary control panel access cover (Figure 5, Item 2), and retain with screws.

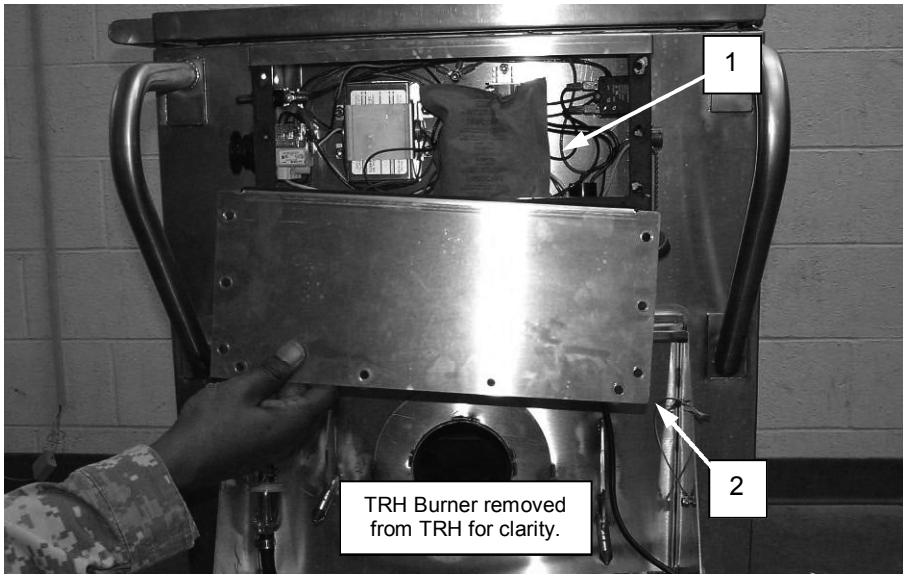


Figure 5. Access Cover Replacement.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

ELECTRICAL CONNECTOR REPLACE

INITIAL SETUP:

Tools and Special Tools	**Personnel Required**
Tool Kit, GMTK (WP 0069, Item 4)	Quartermaster Equipment Repairer 91J (1)
Materials/Parts	**Equipment Condition**
Activated Desiccant (WP 0069, Item 5)	Power disconnected from TRH

REPLACE

1. Remove primary TRH electrical control panel cover (Figure 1, Item 1) by removing 10 screws. Retain screws. Remove desiccant bag (Figure 1, Item 2).

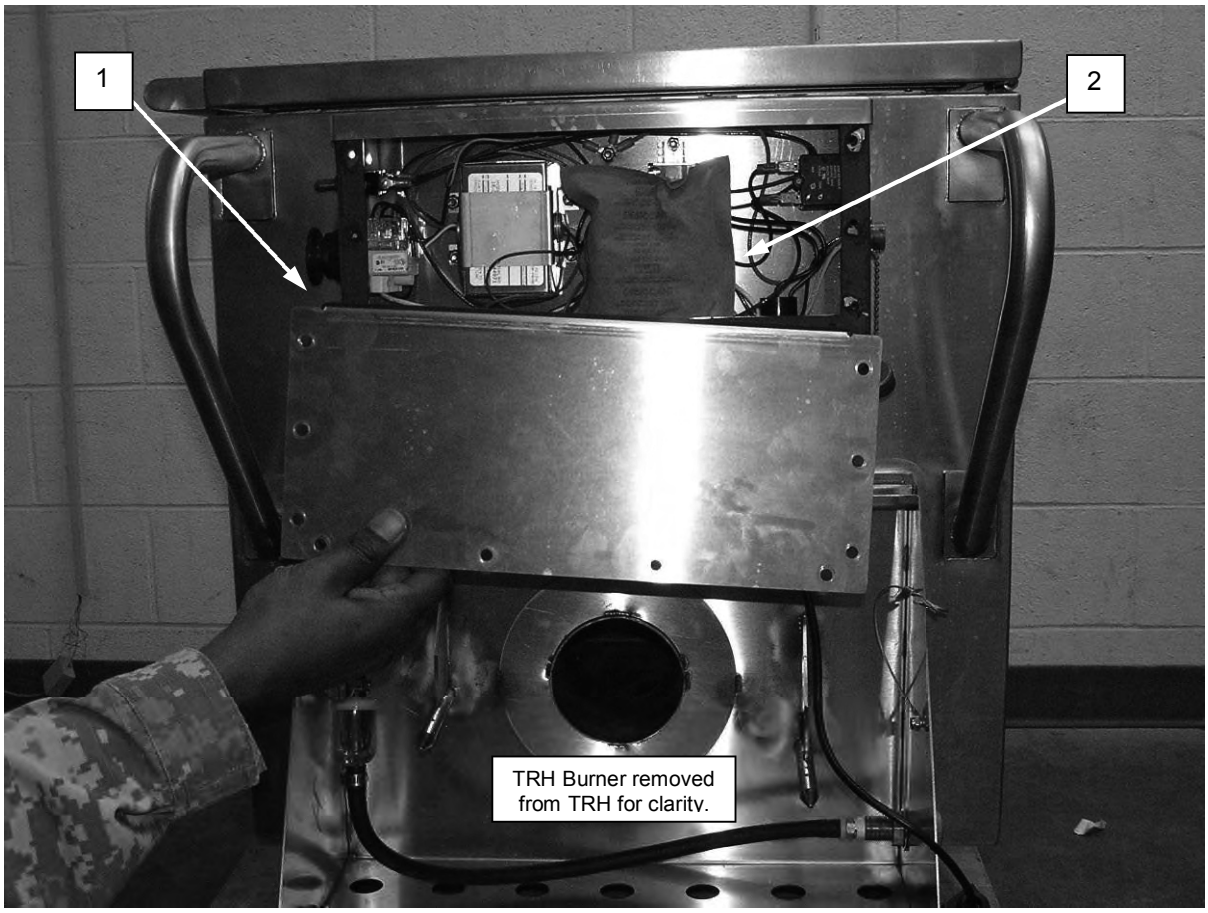


Figure 1. Access Cover Removal.

REPLACE – CONTINUED

2. Remove four Electrical Receptacle Connector retaining screws (Figure 2, Item 1). Retain screws and dust cap for reuse.

Figure 2. Main Power Fitting Removal.

3. Trace wires (Figure 3, Item 1) from the defective plug (Figure 3, Item 2), and replace them one at a time. Transfer wires from defective plug to new plug.

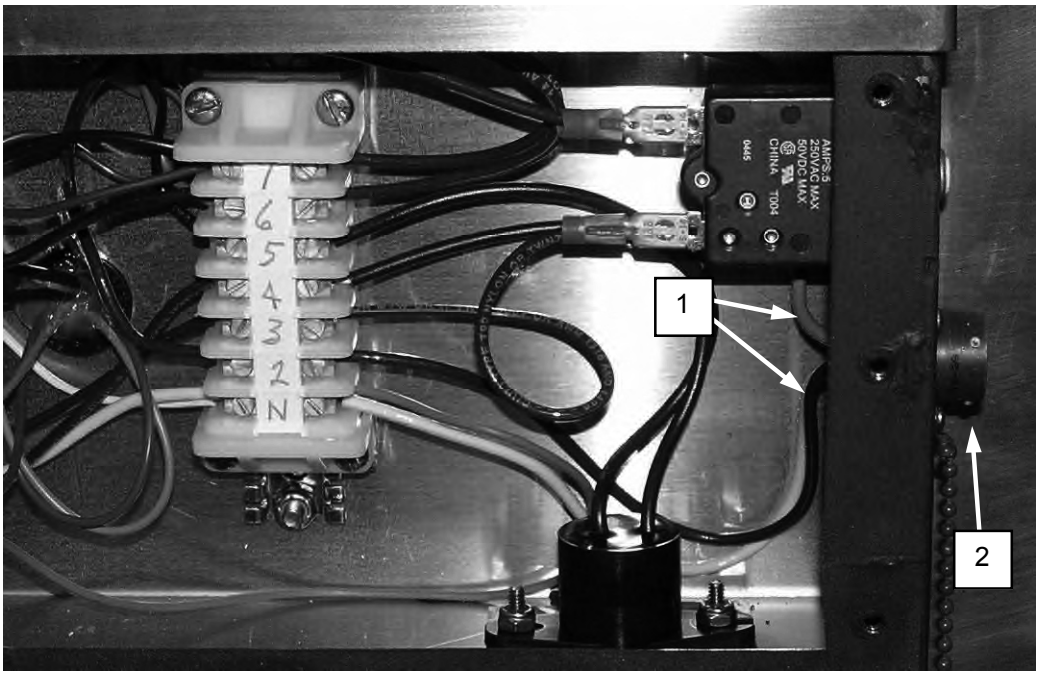


Figure 3. Main Power Fitting Wiring.

REPLACE - CONTINUED

4. Remove the ground wire (Figure 4, Item 2) from the ground connection (Figure 4, Item 1) inside the control panel and replace with the ground wire from the replacement Electrical Receptacle Connector.

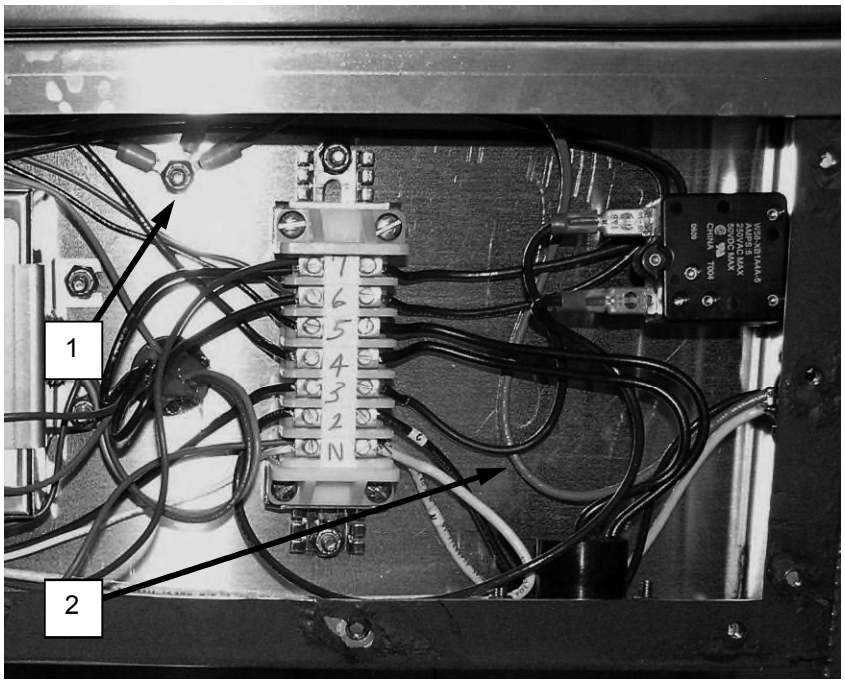


Figure 4. Ground Wire Connection.

5. Install the Electrical Receptacle Connector and four retaining screws with dust cap (Figure 5, Item 1).

Figure 5. Main Power Fitting Replacement.

REPLACE - CONTINUED

NOTE

The desiccant bag is used to protect electrical components by absorbing moisture. If moisture is present in electrical control panel, the desiccant has become saturated and needs replacing. Replace with a new desiccant bag.

6. Ensure desiccant bag (Figure 6, Item 2) is in place inside control panel before replacing control panel cover.

7. Install primary control panel access cover (Figure 6, Item 1), and retain with screws.

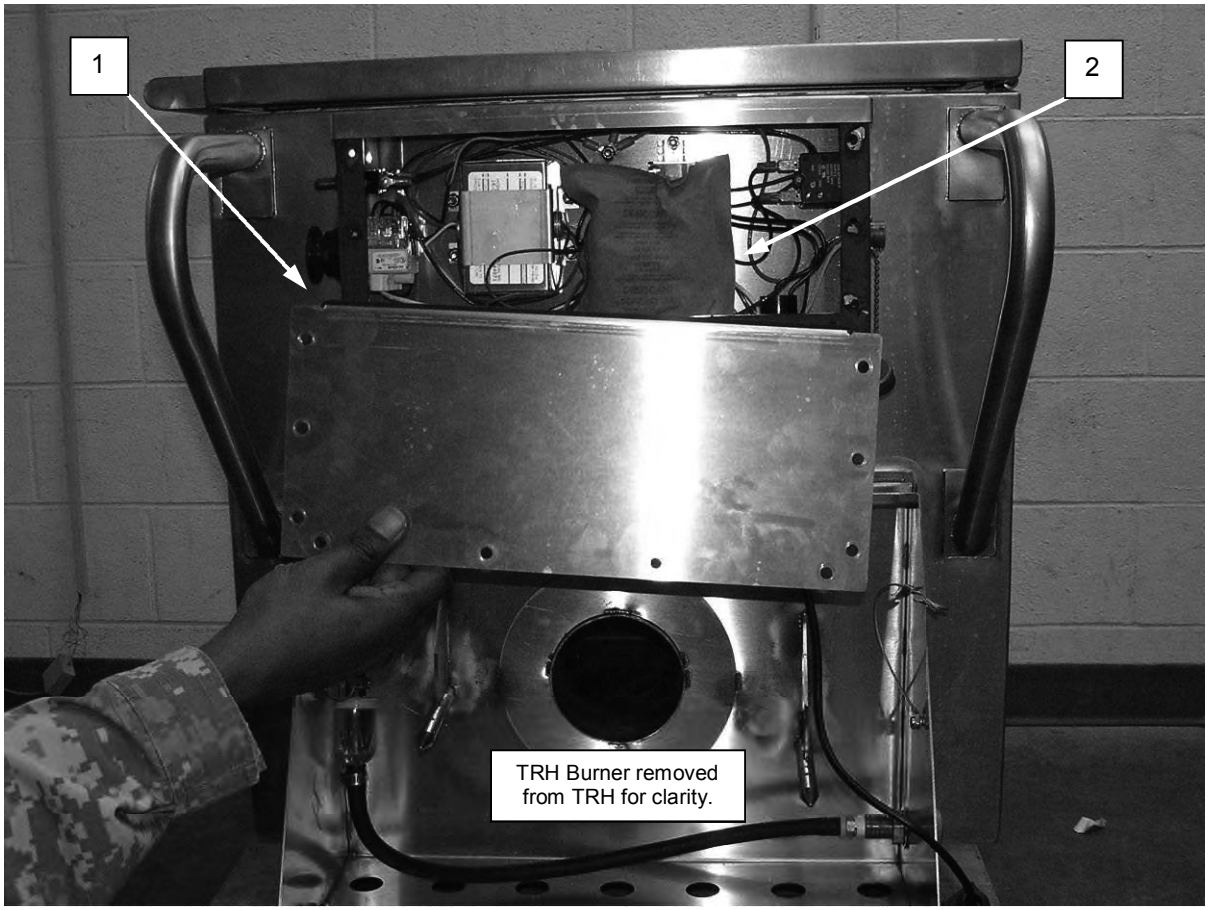


Figure 6. Access Cover Replacement.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

TERMINAL JUNCTION BLOCK REPLACE

INITIAL SETUP:

Tools and Special Tools	**Personnel Required**
Tool Kit, GMTK (WP 0069, Item 4)	Quartermaster Equipment Repairer 91J (1)
Materials/Parts	**Equipment Condition**
Activated Desiccant (WP 0069, Item 5)	Power disconnected from TRH

REPLACE

1. Remove primary TRH electrical control panel cover (Figure 1, Item 1) by removing 10 screws. Retain screws. Remove desiccant bag (Figure 1, Item 2).

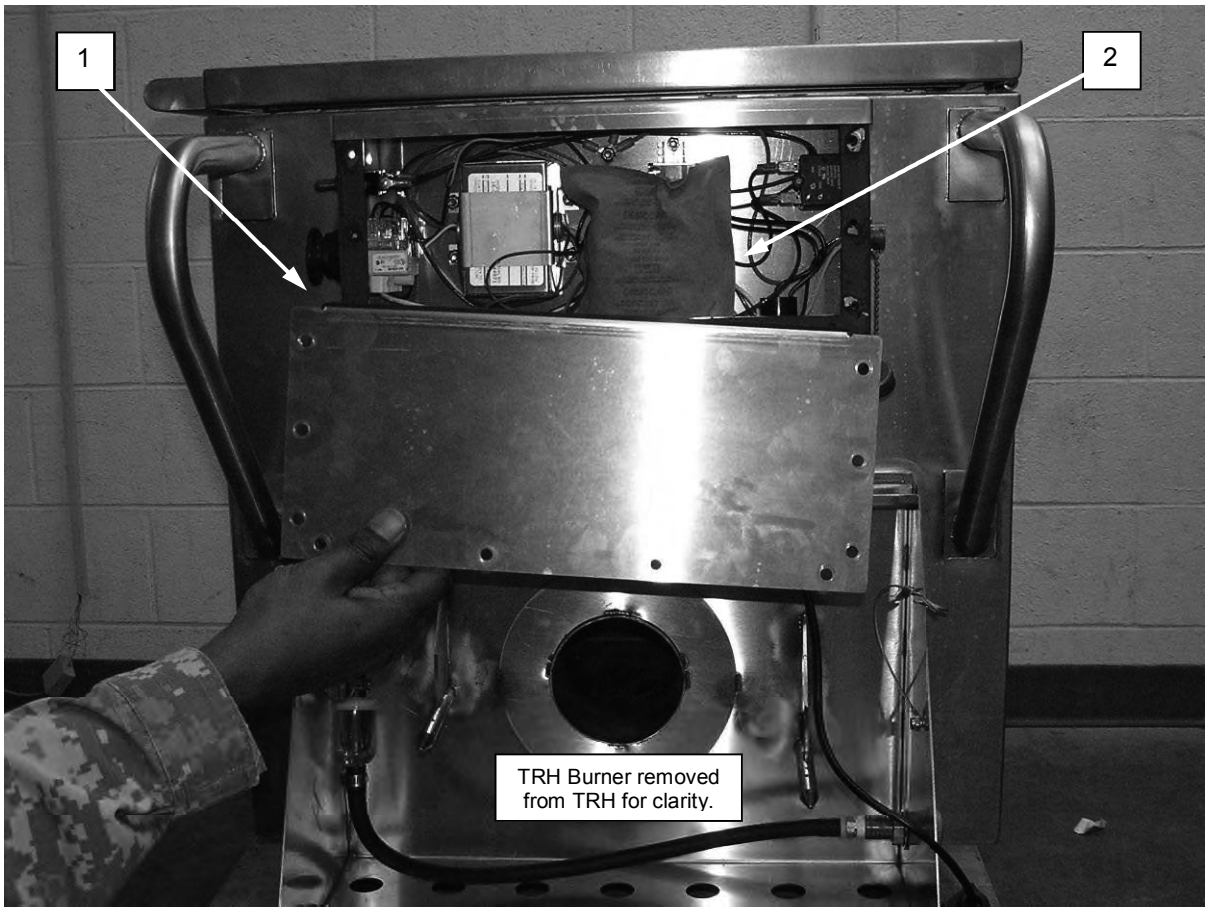


Figure 1. Access Cover Removal.

REPLACE - CONTINUED

2. Remove two nuts (Figure 2, Item 2) retaining terminal block to tank control panel (Figure 2, Item 2).

3. Leaving wires attached, move old terminal block so that the replacement terminal block can be installed.

4. Attach replacement terminal block to tank control panel using two retaining nuts (Figure 2, Item 2).

5. One at a time, remove all wires from old terminal block and attach to replacement terminal block with retaining screws (Figure 2, Item 1).

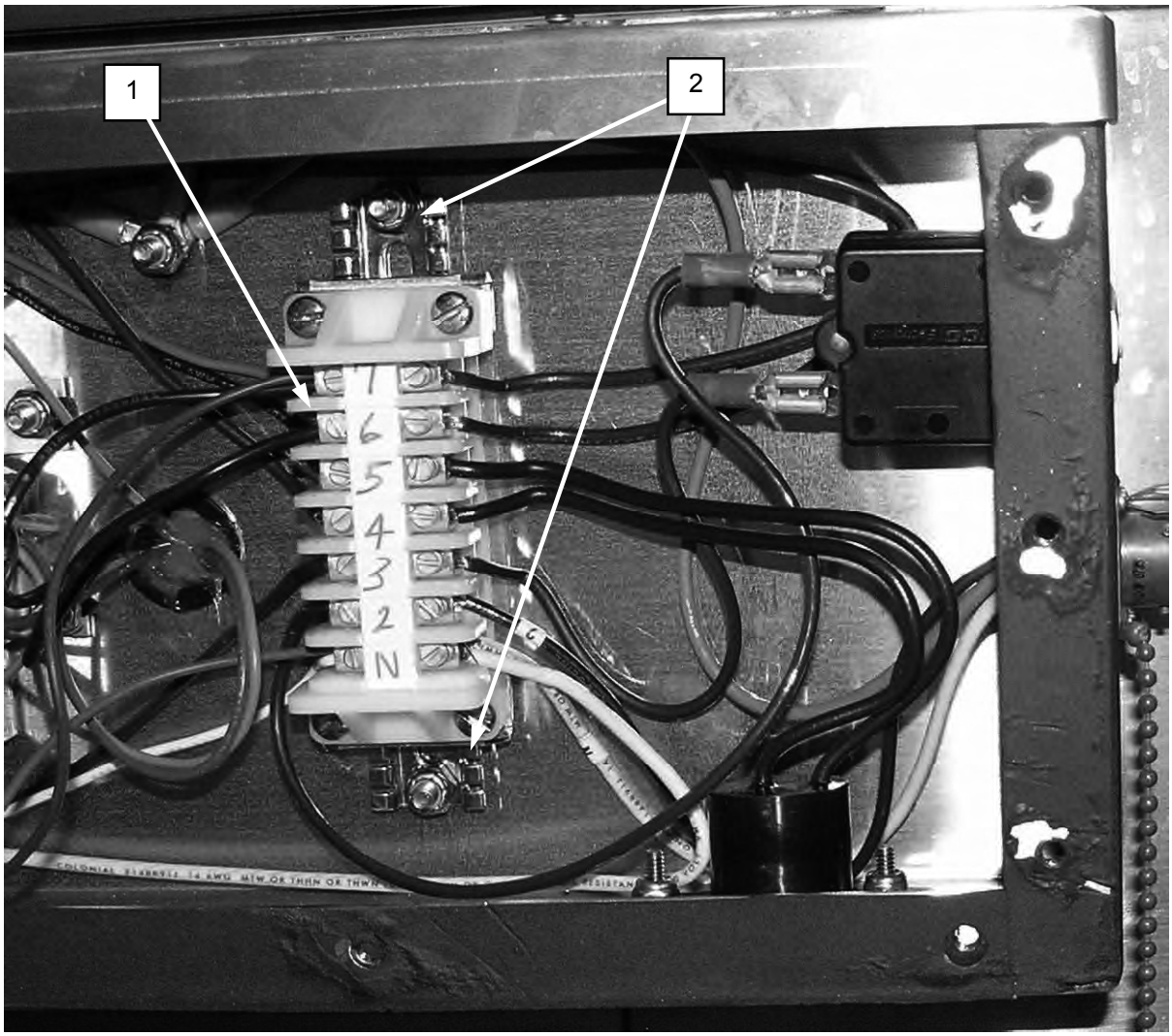


Figure 2. TRH Tank Terminal Block.

REPLACE – CONTINUED

NOTE

The desiccant bag is used to protect electrical components by absorbing moisture. If moisture is present in electrical control panel, the desiccant has become saturated and needs replacing. Replace with a new desiccant bag.

6. Ensure desiccant bag (Figure 3, Item 1) is in place inside control panel before replacing control panel cover (Figure 3, Item 2).

7. Install primary control panel access cover (Figure 3, Item 2), and retain with screws.

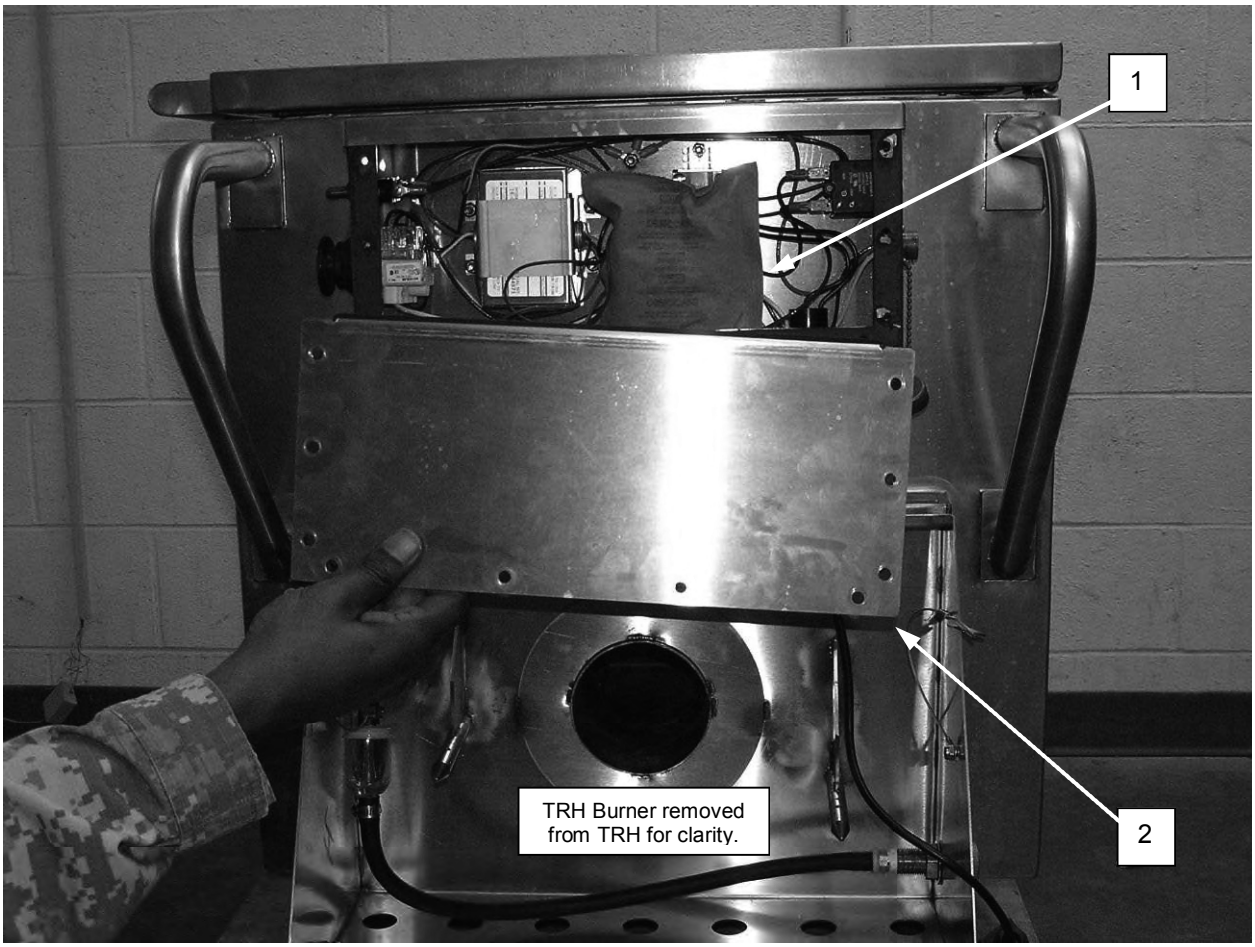


Figure 3. Access Cover Replacement.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

LIQUID LEVEL SWITCH
REPLACE

INITIAL SETUP:

Tools and Special Tools

Tool Kit, GMTK (WP 0069, Item 4)

Personnel Required

Quartermaster Equipment Repairer 91J (1)

Materials/Parts

Activated Desiccant (WP 0069, Item 5)
Electrical Insulation Tape (WP 0069, Item 18)
RTV Sealant (WP 0069, Item 16)
Splice Conductor (WP 0069, Item 4)

Equipment Condition

Power disconnected from TRH

REPLACE

1. Remove primary TRH electrical control panel cover (Figure 1, Item 1) by removing 10 screws. Retain screws. Remove desiccant bag (Figure 1, Item 2).

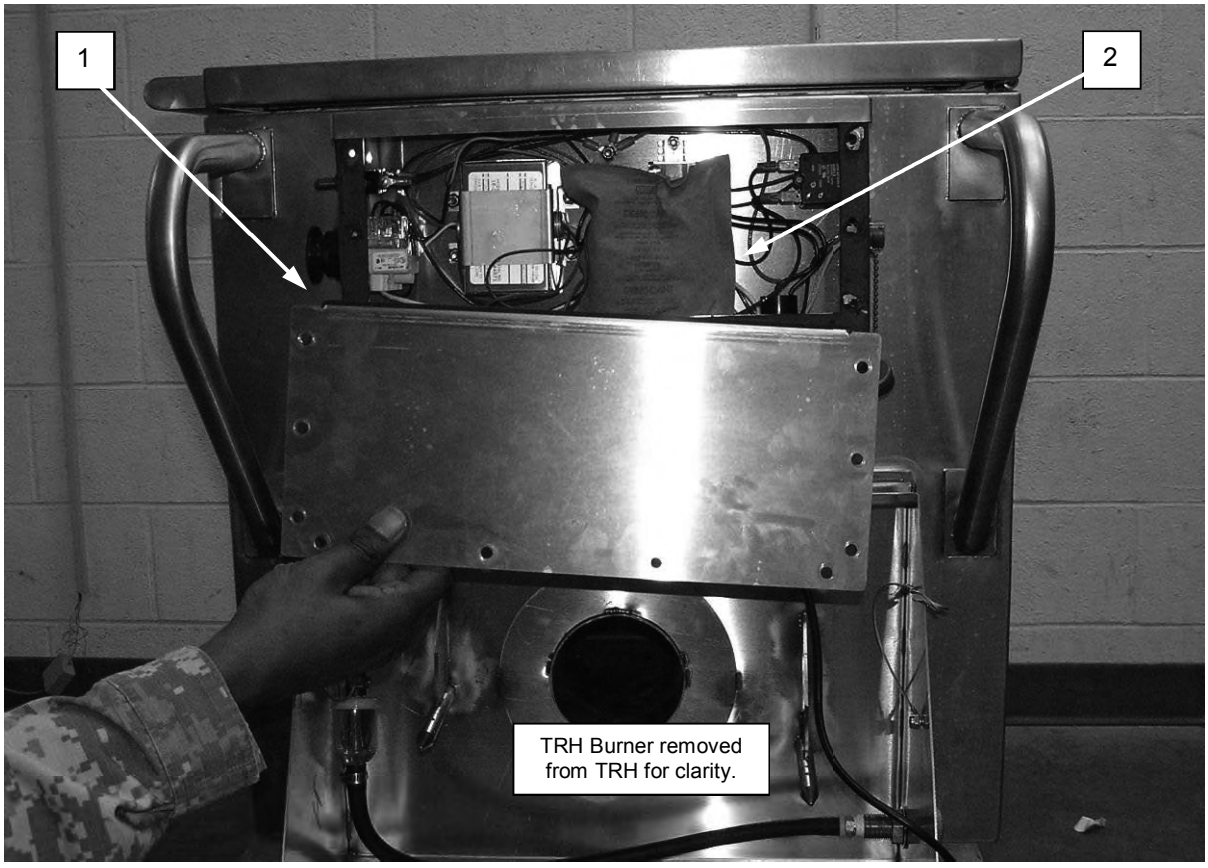


Figure 1. Access Cover Removal.

REPLACE – CONTINUED

2. Remove four mounting nuts from liquid level switch mounting bracket (Figure 2, Item 1).

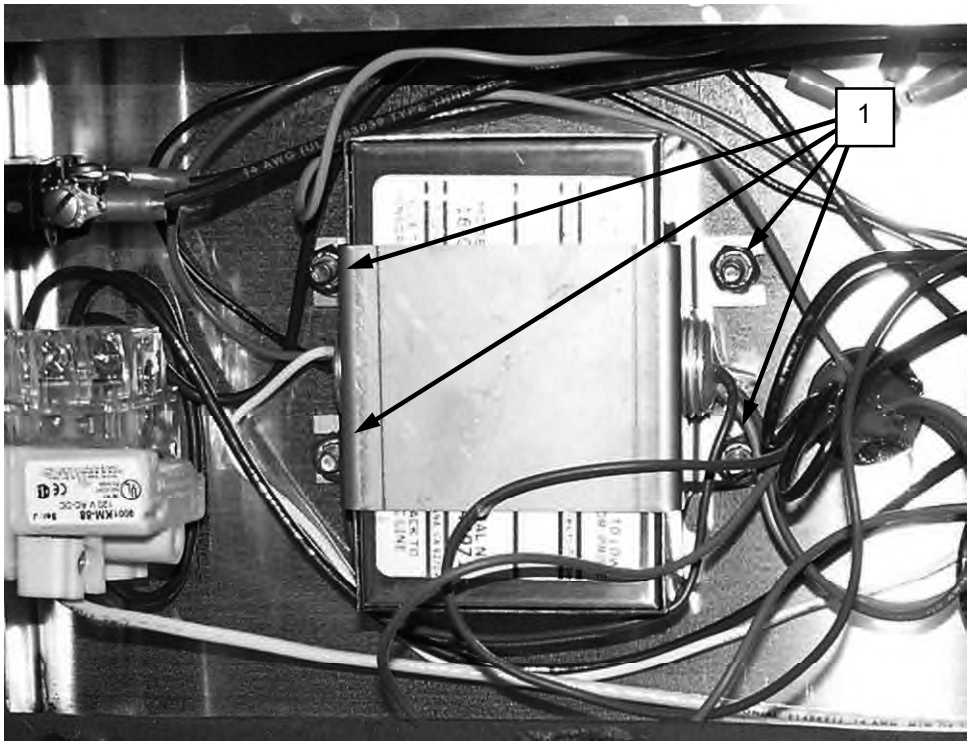


Figure 2. Removing Liquid Level Switch Mounting Bracket.

3. Cut wires (Figure 3, Item 1).

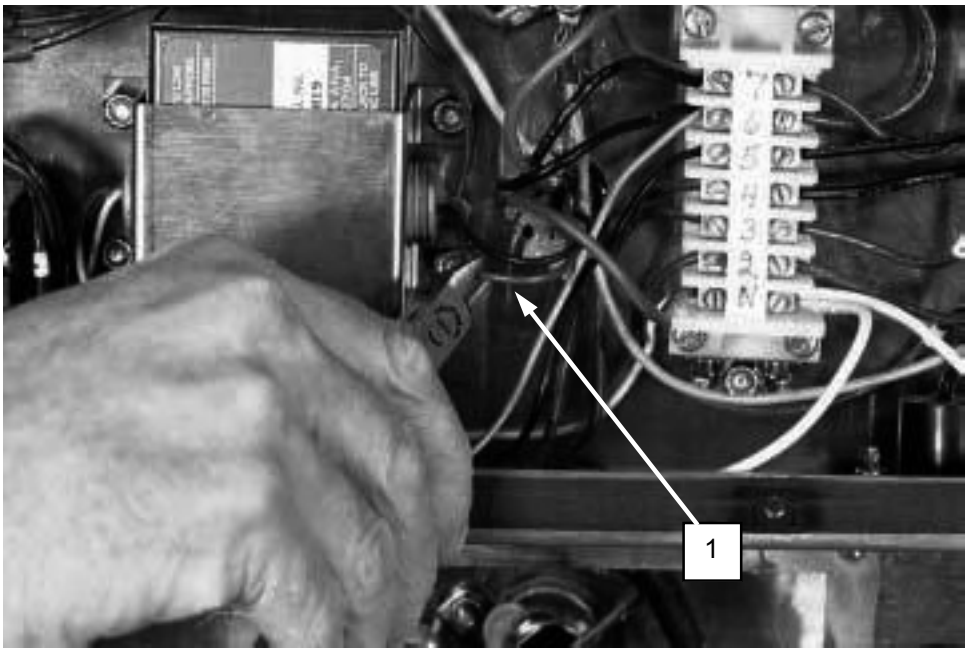


Figure 3. Cutting Liquid Level Switch Wires.

REPLACE – CONTINUED

4. Use butt connectors to splice wires (Figure 4, Item 2) from replacement liquid level switch (Figure 4, Item 1) to those cut away from old unit.

5. Install replacement liquid level switch using mounting bracket and nuts (Figure 4, Item 3). Do not over tighten.

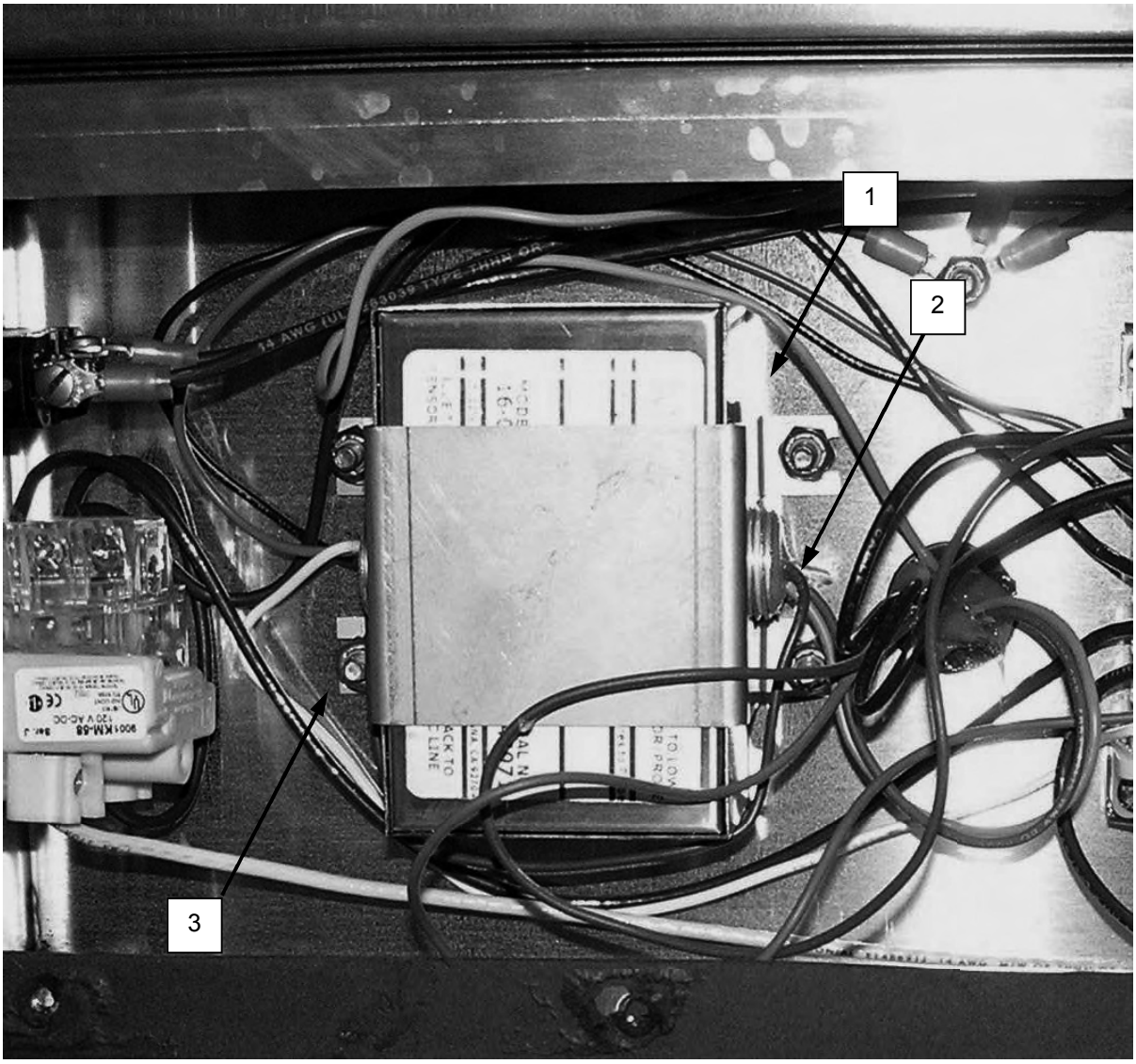


Figure 4. Installing Liquid Level Switch and Wires.

REPLACE – CONTINUED

NOTE

The desiccant bag is used to protect electrical components by absorbing moisture. If moisture is present in electrical control panel, the desiccant has become saturated and needs replacing. Replace with a new desiccant bag.

6. Ensure desiccant bag (Figure 5, Item 1) is in place inside control panel before replacing control panel cover (Figure 3, Item 2).

7. Install primary control panel access cover (Figure 5, Item 2), and retain with screws.

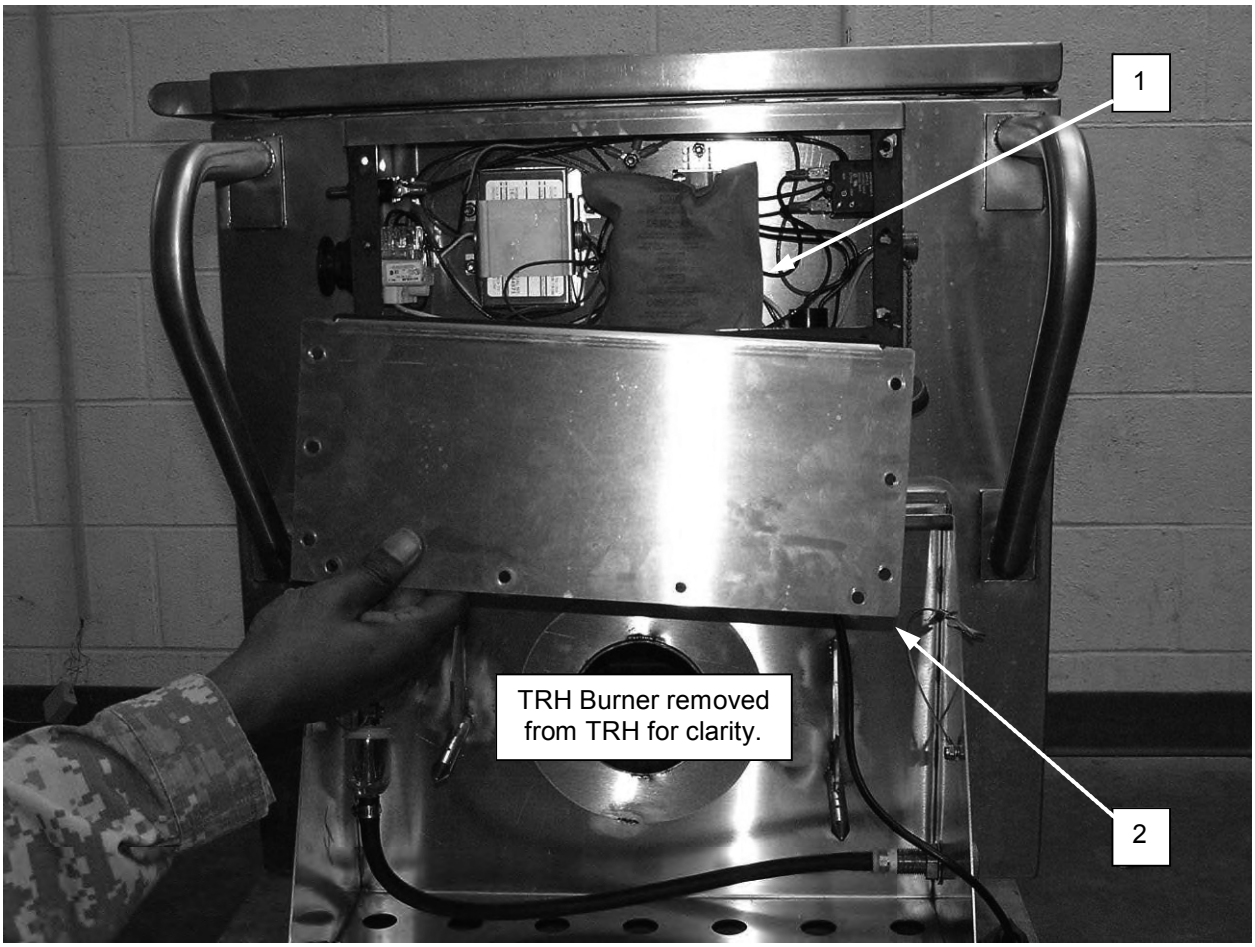


Figure 5. Access Cover Replacement.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

TEFLON PROBE SENSOR
REPLACE

INITIAL SETUP:

Tools and Special Tools	**Personnel Required**
Tool Kit, GMTK (WP 0069, Item 4)	Quartermaster Equipment Repairer 91J (1)
Materials/Parts	**Equipment Condition**
RTV Sealant (WP 0069, Item 16)	TRH drained of water Power disconnected from TRH

REPAIR

1. Remove secondary TRH electrical control panel cover (Figure 1, Item 1) and black rubber cover gasket by removing four screws. Retain screws.

Figure 1. Secondary Access Panel Cover.

REPAIR – CONTINUED

2. Remove the blanket insulation from inside the access cover and set aside.

3. Remove the sealant protecting the Teflon probe (Figure 2, Item 1) and discard sealant.

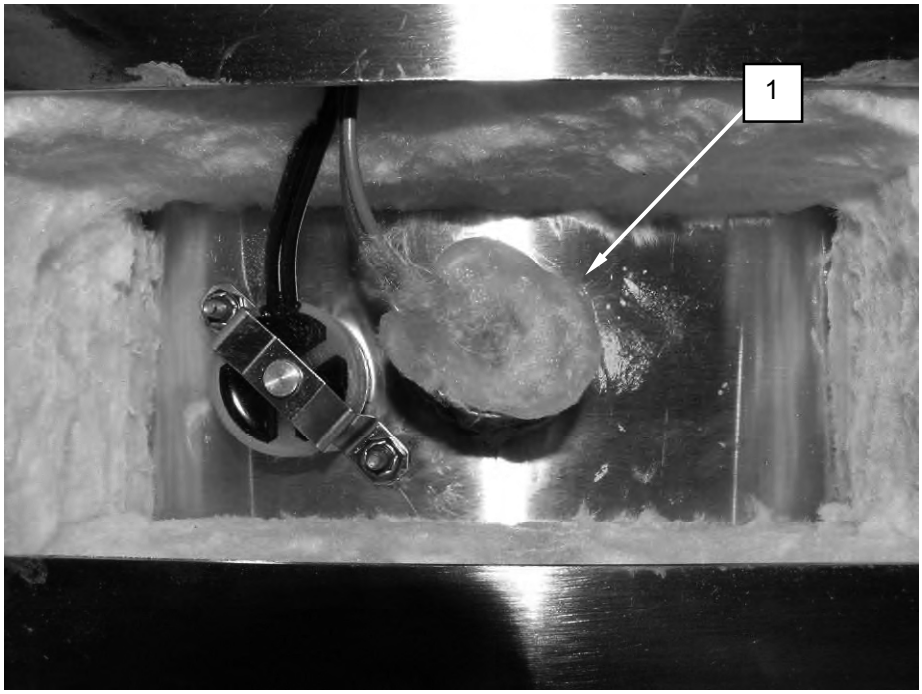


Figure 2. Teflon Probe Location.

4. Remove the stainless steel screw from the wire lead on the probe (Figure 3, Item 1).

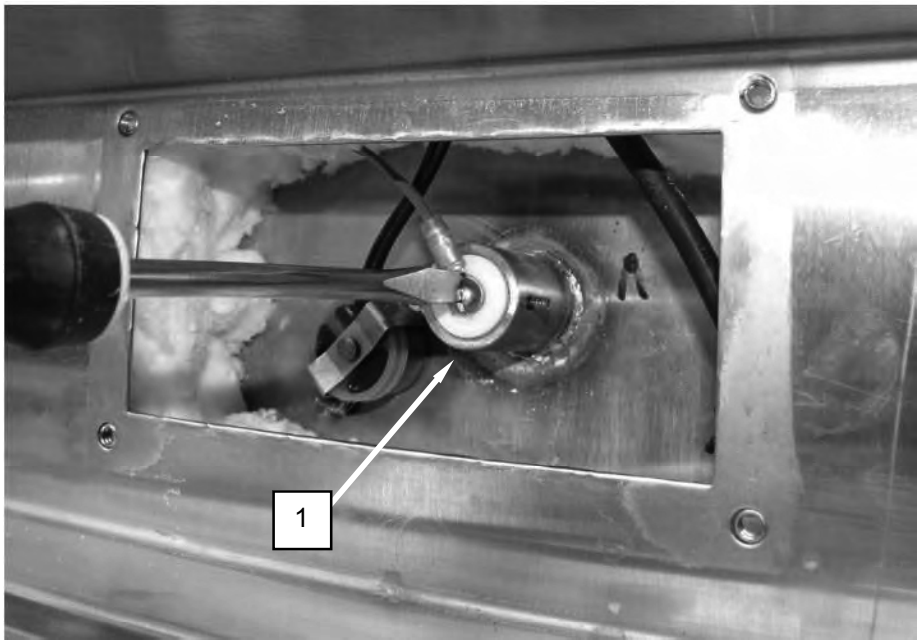


Figure 3. Teflon Probe and Setscrew Removal.

REPAIR – CONTINUED

5. The Teflon probe is secured inside the stainless sleeve via an O-ring seal and a stainless setscrew. Loosen the setscrew to allow removal of the Teflon probe (Figure 4, Item 1).

6. Using the blunt end of a screwdriver, push the Teflon probe out of its stainless steel sleeve by pushing from inside the tank outward toward the secondary access panel (Figure 4, Item 2).

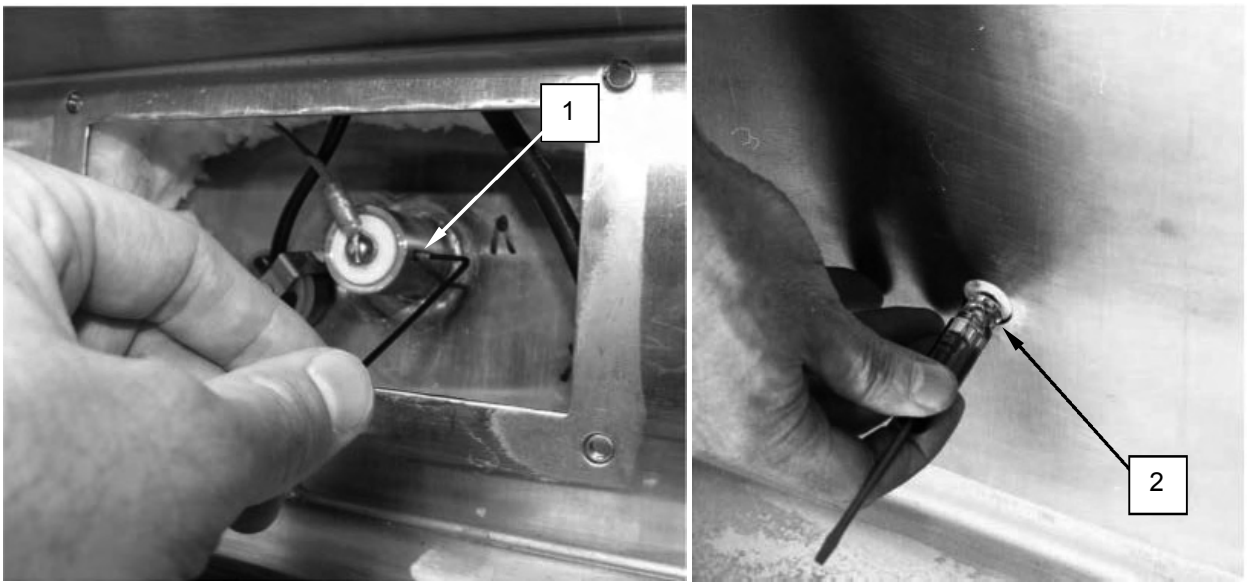


Figure 4. Removing the Teflon Probe.

7. Insert the replacement Teflon probe assembly into the stainless sleeve. Ensure setscrew (Figure 5, Item 2) is backed out of Teflon probe and ensure O-ring seal is present on Teflon probe (Figure 5, Item 1).

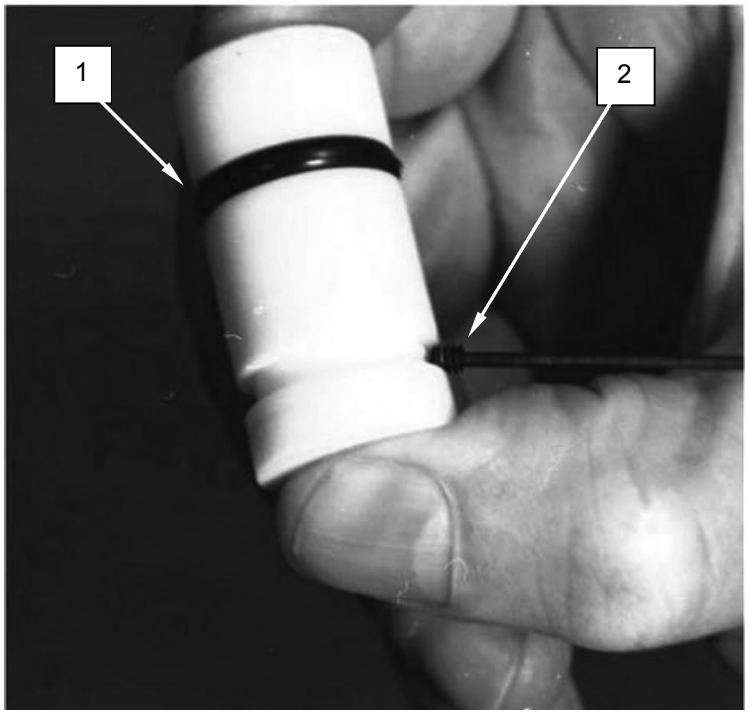


Figure 5. Teflon Probe.

REPAIR – CONTINUED

8. Tighten setscrew in place (Figure 6, Item 1).

9. Reconnect and tighten the eye loop connector lead back onto the Teflon probe (Figure 6, Item 2).

10. Apply RTV sealant to top of screw head and connector for insulation.

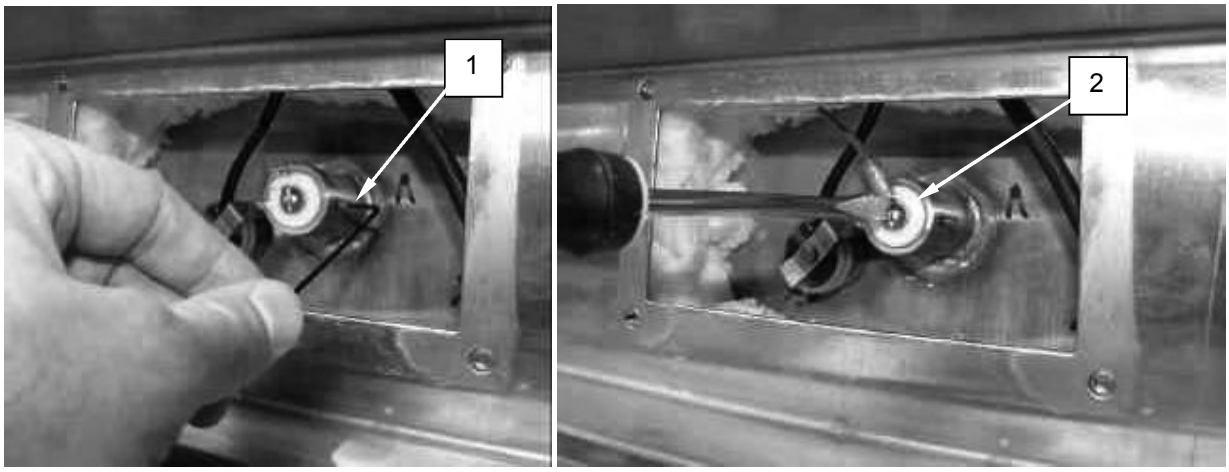


Figure 6. Installing Teflon Probe.

11. Install blanket insulation in secondary access panel.

12. Install the secondary access cover (Figure 7, Item 1), ensuring that the black rubber cover plate gasket is between the stainless steel cover plate and the tray ration heater tank.

Figure 7. Secondary Access Panel Cover.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

TILT SWITCH
REPLACE

INITIAL SETUP:

Tools and Special Tools	**Personnel Required**
Tool Kit, GMTK (WP 0069, Item 4)	Quartermaster Equipment Repairer 91J (1)
Materials/Parts	**Equipment Condition**
Activated Desiccant (WP 0069, Item 5)	Power disconnected from TRH

REPLACE

WARNING

Before replacing the tilt switch, check your unit SOP and local environmental regulations to ensure the switch will be disposed of properly. Do not open, incinerate, or bury the switch. Failure to observe safety precautions may result in environmental contamination and possible poisoning of personnel.

1. Remove primary TRH electrical control panel cover (Figure 1, Item 1) by removing 10 screws. Retain screws. Remove desiccant bag (Figure 1, Item 2).

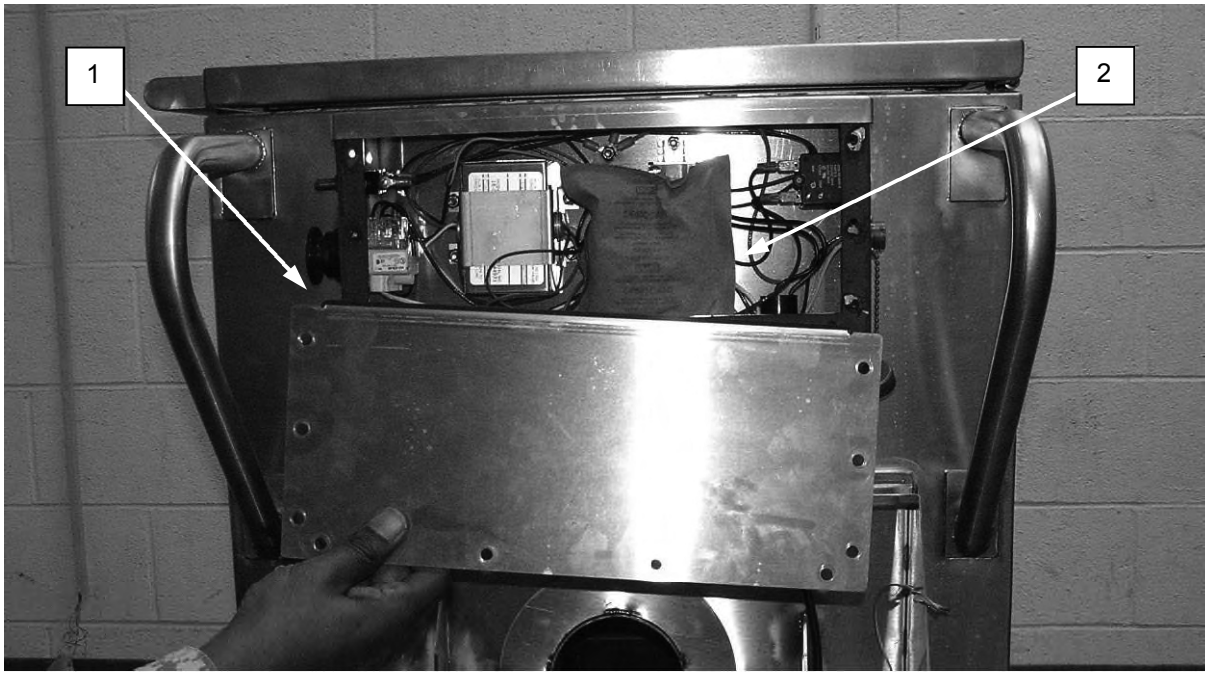


Figure 1. Access Cover Removal.

REPLACE – CONTINUED

2. Remove two tilt switch retaining nuts from angled platform (Figure 2, Item 1).

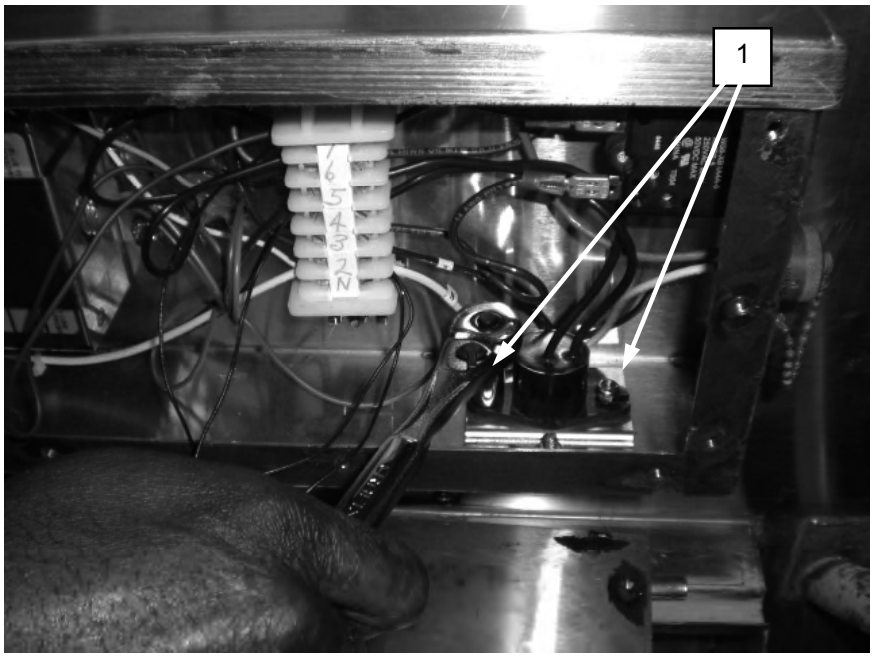


Figure 2. Tank Tilt Switch Removal.

3. Install replacement tilt switch by removing and replacing one wire at a time (Figure 3, Item 2) on the terminal block (Figure 3, Item 1).

4. Install switch in control box and tighten screws.

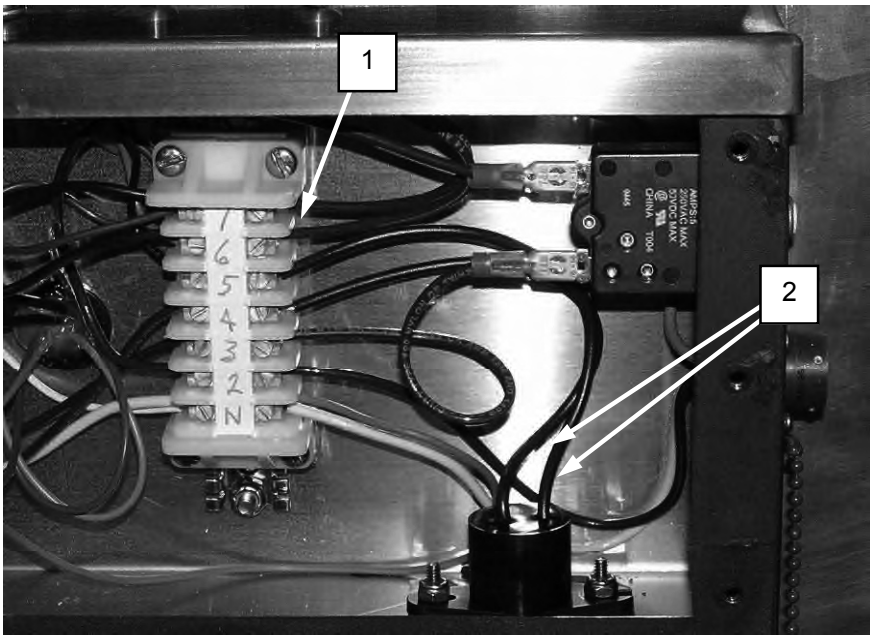


Figure 3. Tilt Switch Wiring.

REPLACE – CONTINUED

NOTE

The desiccant bag is used to protect electrical components by absorbing moisture. If moisture is present in electrical control panel, the desiccant has become saturated and needs replacing. Replace with a new desiccant bag.

5. Ensure desiccant bag (Figure 4, Item 2) is in place inside control panel before replacing control panel cover.

6. Install primary control panel access cover (Figure 4, Item 1), and retain with screws.

Figure 4. Access Cover Replacement.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

THERMAL RESISTOR REPLACE

INITIAL SETUP:

Tools and Special Tools

Tool Kit, GMTK (WP 0069, Item 4)

Personnel Required

Quartermaster Equipment Repairer 91J (1)

Materials/Parts

Activated Desiccant (WP 0069, Item 5)
Electrical Insulation Tape (WP 0069, Item 18)
RTV Sealant (WP 0069, Item 16)
Splice Conductor (WP 0069, Item 4)

Equipment Condition

Power disconnected from TRH

REPLACE

1. Remove secondary TRH electrical control panel cover (Figure 1, Item 1) by removing four screws. Retain screws.

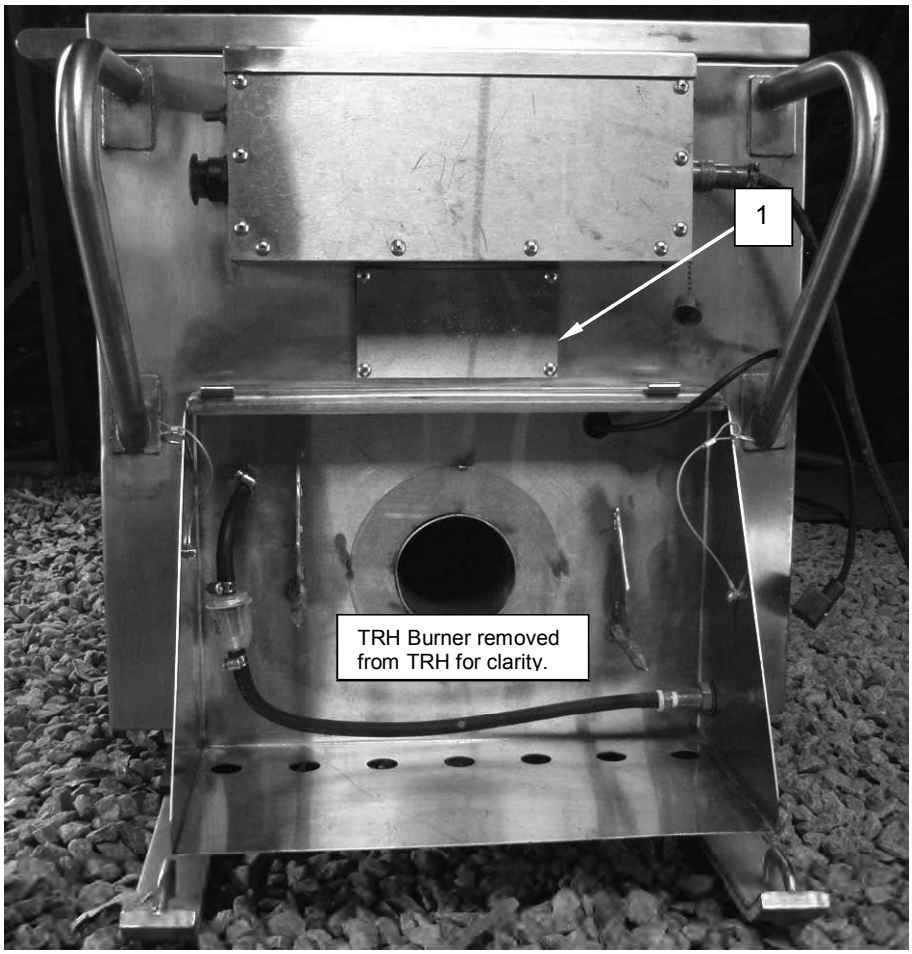


Figure 1. Secondary Access Panel Cover.

REPLACE - CONTINUED

2. Remove the blanket insulation from inside the access control panel and set aside.

3. Inside the secondary access panel, locate the thermal resistor (Figure 2, Item 1).

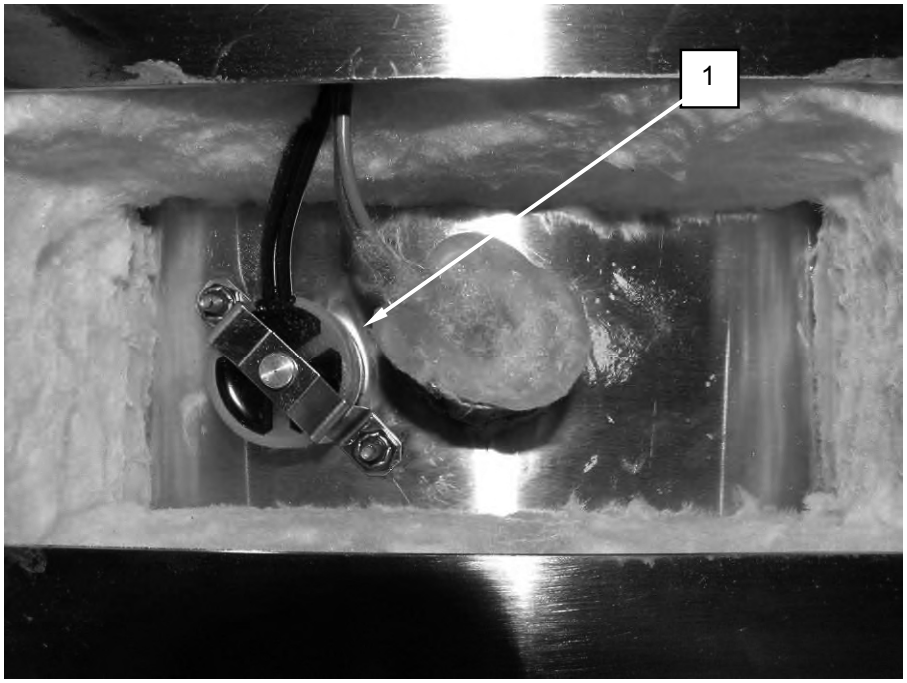


Figure 2. Thermal Resistor Location.

4. Remove the lock nuts (Figure 3, Item 1) from the threaded studs on the thermal resistor Mounting Bracket. Loosen thermal resistor mounting flange (Figure 3, Item 2) from threaded studs and remove it by hand.

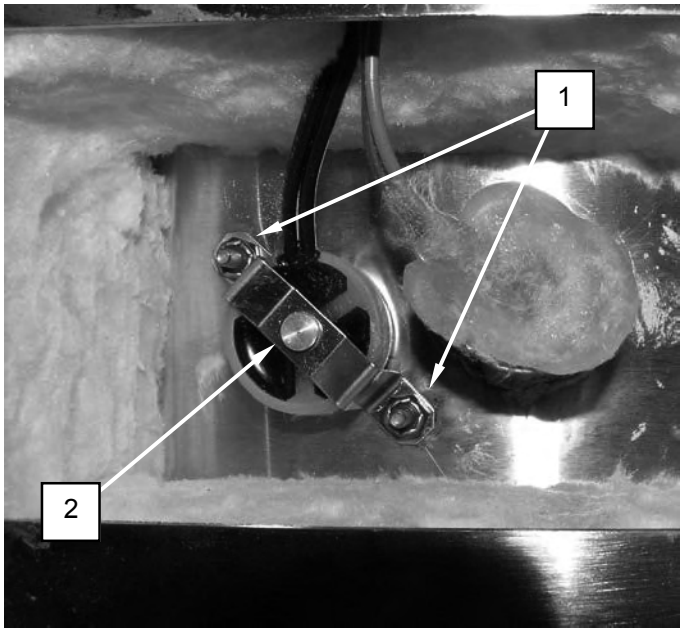


Figure 3. Removing the Thermal Resistor Retaining Nuts.

REPLACE – CONTINUED

5. Cut wire leads, approximately 2 inches in length, from thermal resistor. Discard bad thermal resistor and leave hanging wire leads for reconnection later (Figure 4, Item 1).

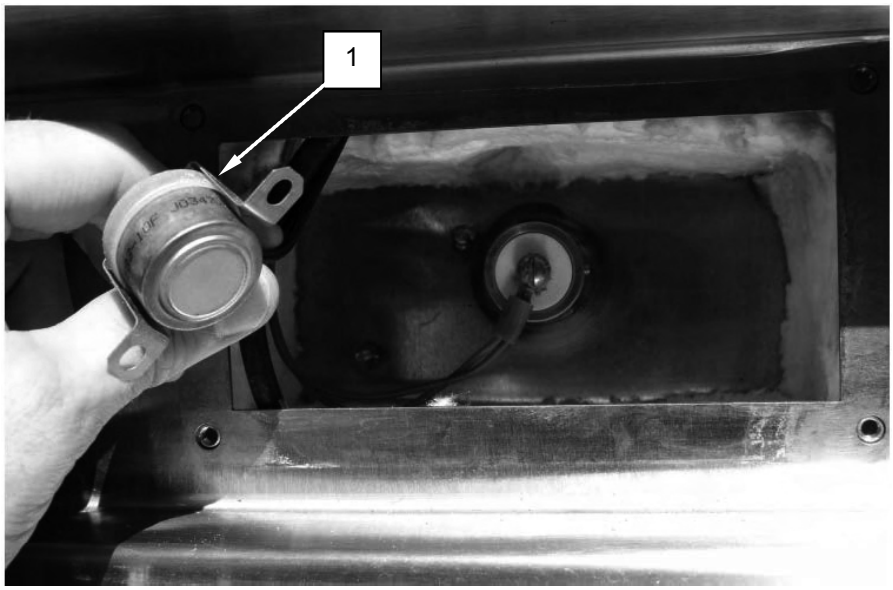


Figure 4. Removing the Thermal Resistor.

6. Mount a new thermal resistor so that it sits in the same position as the bad thermal resistor.

7. Align holes in the mounting flange over the threaded weld studs and push the thermal resistor into place so it is flush against the TRH tank wall. Secure thermal resistor into place with lock nuts (Figure 5, Item 1).

Figure 5. Removing the Thermal Resistor Retaining Nuts.

REPLACE – CONTINUED

8. Using butt connectors (Figure 6, Item 1), connect the thermal resistor wires back to the wire leads in the tank. Orientation of wires is not important.

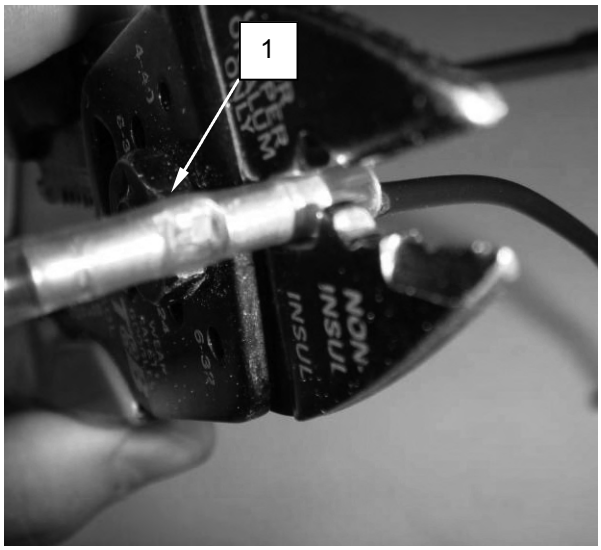


Figure 6. Wire Connections Using a Butt Connector.

9. Install blanket insulation in secondary access panel.

10. Install the secondary access cover (Figure 7, Item 1) ensuring that the black rubber cover plate gasket is between the stainless steel cover plate and the Tray Ration Heater tank.

Figure 7. Secondary Access Panel Cover.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

POWER INVERTER, STATIC
TEST, REPAIR

INITIAL SETUP:

Tools and Special Tools

Tool Kit, GMTK (WP 0069, Item 4)

Personnel Required

Quartermaster Equipment Repairer 91J (1)
Utilities Equipment Repairer 91C (1)

References

WP 0010

TEST

1. Connect the NATO cable plug to the vehicle NATO receptacle.
2. Move the inverter power switch to the ON position (Figure 1, Item 1).
3. Check status of LED indicators on TRH Inverter.
   a. Ensure the green LED Indicator (Figure 1, Item 2) is lit.
   b. If the red LED indicator (Figure 1, Item 3) is lit, start the vehicle and run the motor for the remainder of the test.

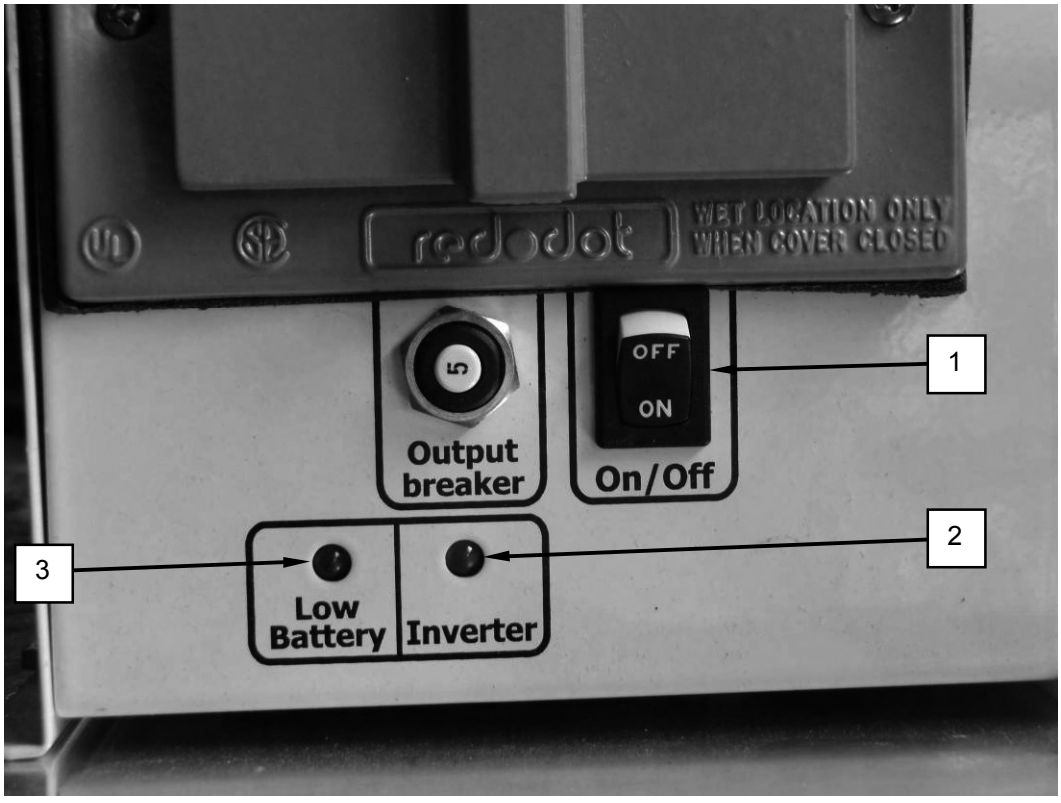


Figure 1. TRH Inverter.

TEST – CONTINUED

c. If there is no lit LED indicator, perform the following actions:

(1) Verify connection of NATO plug cable to the vehicle NATO receptacle is secure.

(2) Check NATO plug fuse for proper function.

(3) Start vehicle to recharge battery.

(4) If another vehicle is available, connect the NATO plug cable to the NATO receptacle on the other vehicle to ensure a malfunction does not exist in the vehicle.

4. Press the reset button on the ground fault circuit interrupter (GFCI) receptacle (Figure 2, Item 1) and the TRH Inverter circuit breaker (Figure 2, Item 2).

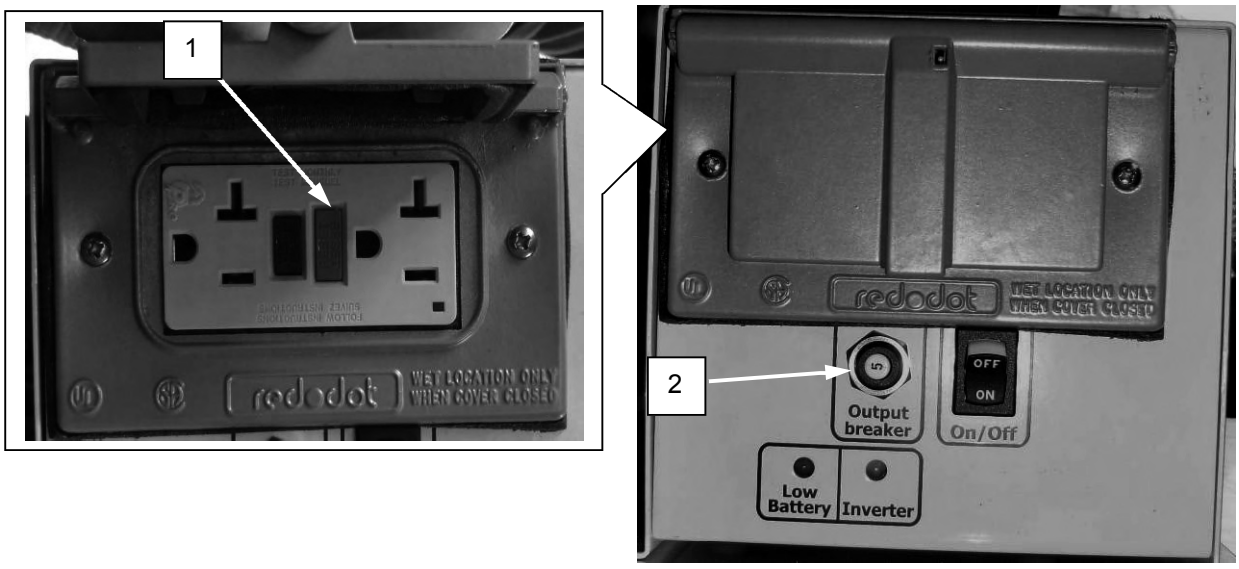


Figure 2. GFCI Receptacle on TRH Inverter.

5. If the TRH Inverter is still not working properly, verify proper power to the GFCI receptacle by connecting a known good 110 VAC device (less than 300 watts).

a. If the known good device functions properly, the problem exists in the TRH. Refer to WP 0010 to troubleshoot the TRH tank electrical system.

b. If the known good device does not properly function, the problem exists in the inverter.

6. Repair the TRH Inverter IAW the repair procedures in this WP.

END OF TASK

REPAIR

NOTE

Repair of the TRH Inverter consists of replacing the fuse in the TRH Inverter NATO cable plug.

If the TRH Inverter is not equipped with a fuse, there is no repair on the inverter.

1. Disconnect the NATO cable plug (Figure 3, Item 2) from the NATO receptacle inside the vehicle under the passenger seat. If the NATO adapter assembly is in use, disconnect the NATO adapter assembly in the trailer (Figure 3, Item 1).

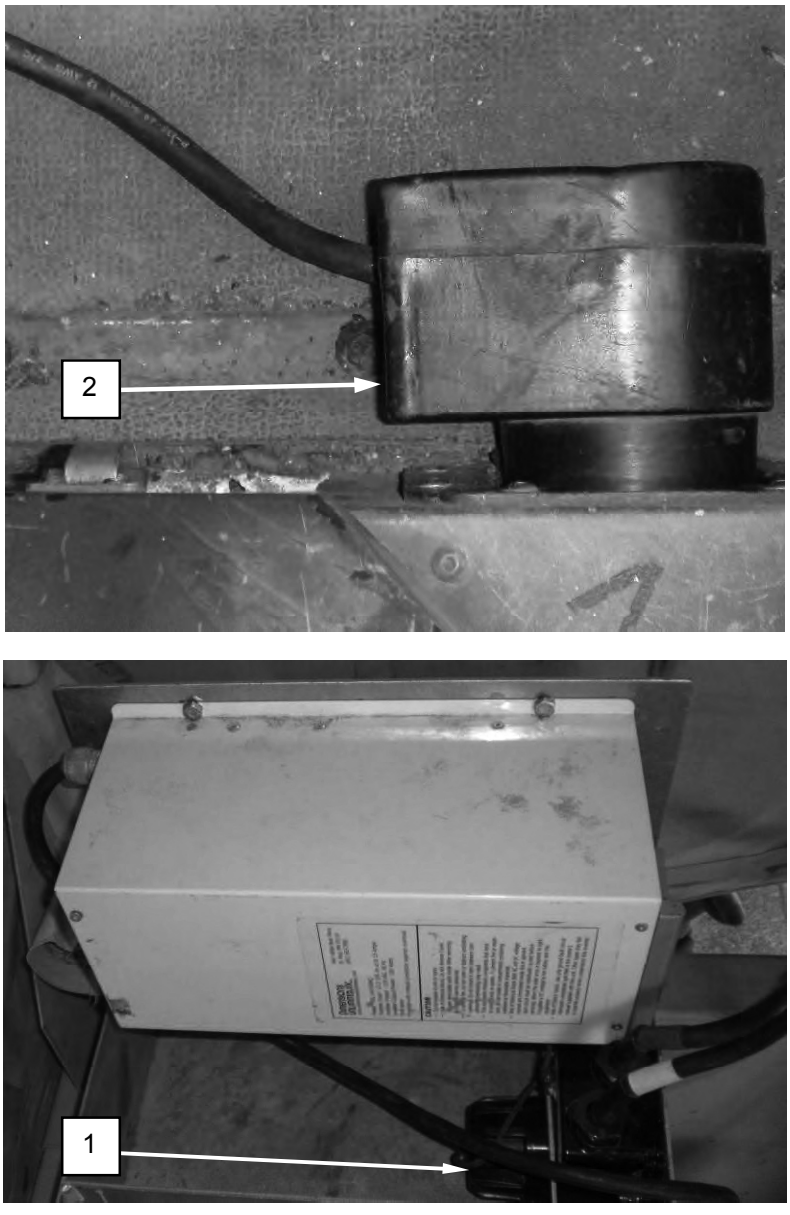


Figure 3. NATO Plug Receptacle.

REPAIR – CONTINUED

2. Remove fuse cover (Figure 4, Item 1) on NATO cable plug by twisting open with a flat-tipped screwdriver.

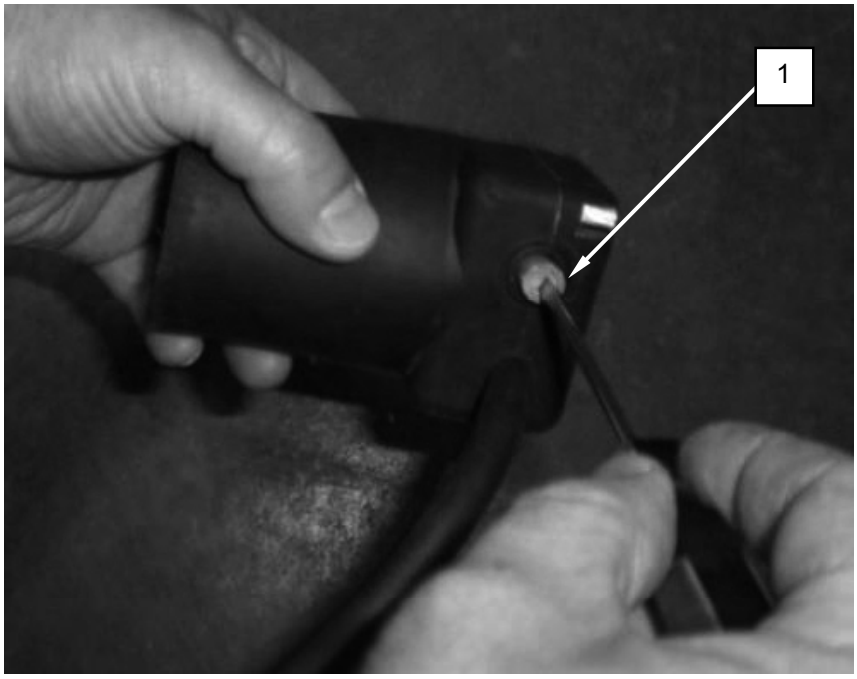


Figure 4. Removing TRH Inverter Fuse.

3. Remove fuse (Figure 5, Item 1) from fuse cover (Figure 5, Item 2).

4. Visually inspect fuse. If fuse is blown, replace with serviceable fuse.

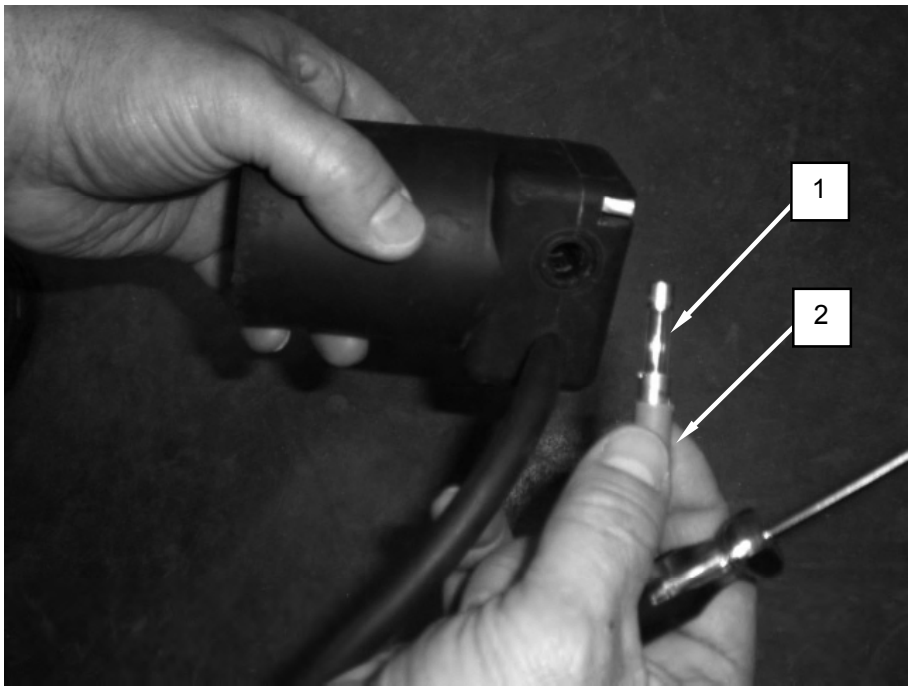


Figure 5. Removing TRH Inverter Fuse.

REPAIR – CONTINUED

5. Install fuse cover (Figure 6, Item 1) on NATO cable plug by pushing and twisting with a flat-tipped screwdriver.

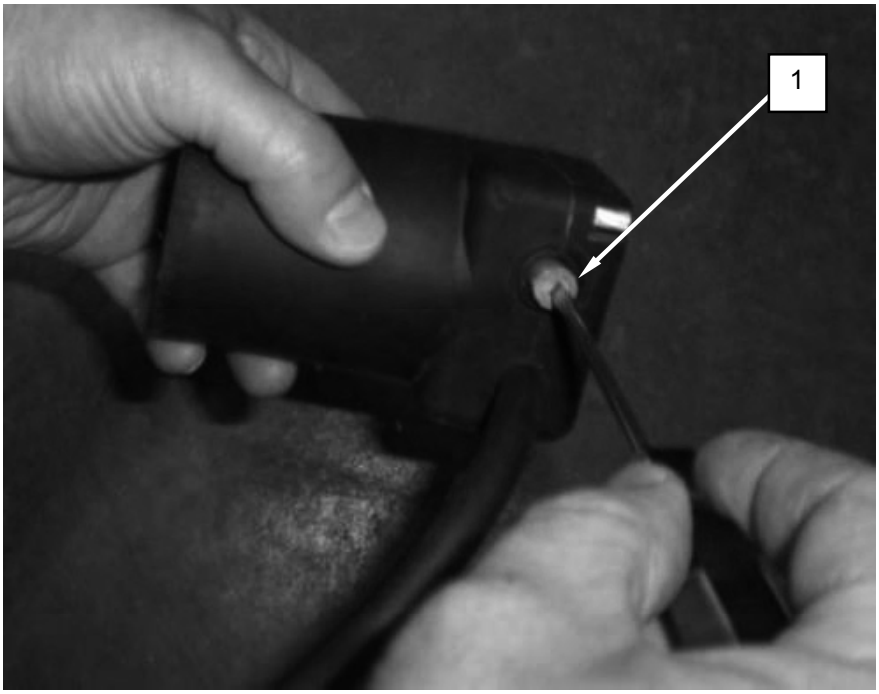


Figure 6. Replacing TRH Inverter Fuse.

REPAIR – CONTINUED

6. Connect the NATO cable plug (Figure 7, Item 2) to the NATO receptacle. If the NATO adapter assembly is in use, connect the NATO adapter assembly in the trailer (Figure 7, Item 1).

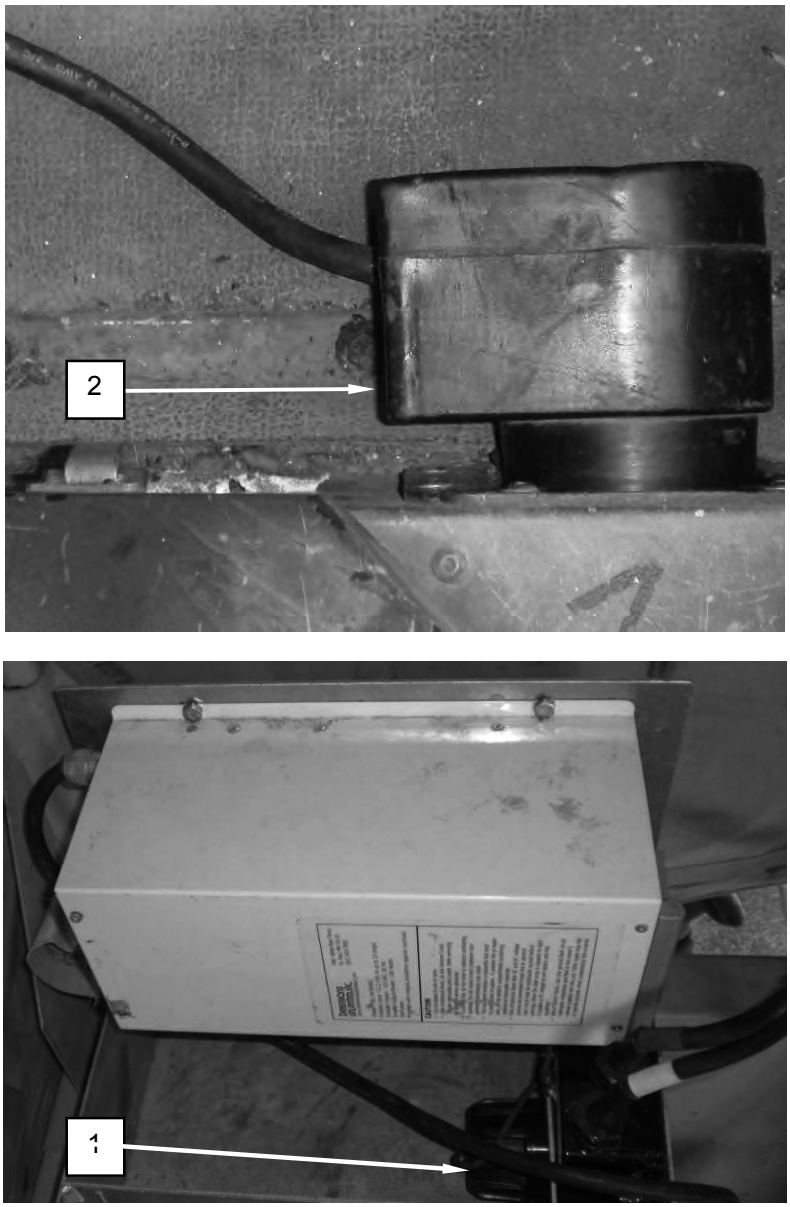


Figure 7. NATO Plug Receptacle Connection.

END OF TASK

END OF WORK PACKAGE

SERVICE MAINTENANCE

TANK SKID
REPLACE

INITIAL SETUP:

Tools and Special Tools

Tool Kit, GMTK (WP 0069, Item 4)

Personnel Required

Quartermaster Equipment Repairer 91J (1) and Unspecified MOS (3)

Materials/Parts

Oil and Water Absorbent Material (WP 0069, Item 1)
Wiping Rag (WP 0069, Item 13)

Equipment Condition

TRH Burner removed from TRH (WP 0026)
TRH Tank empty and removed from vehicle

REPLACE

WARNING

The TRH weighs approximately 320 pounds when empty and 525 pounds when full. Proper lifting technique is required to prevent damage to equipment and personnel. Always drain water tank before lifting or moving TRH. Four persons must be used to move the TRH onto its top, lifting with legs, not back, to prevent injury. Do not use the lid handles to move the TRH, use the two lift bars on the TRH.

1. Using a four-person lift, turn the TRH over so that it is resting on its top, elevating the skids.

2. Remove four retaining bolts, flat washers, and nuts from the bottom of the skid (two each on the front and two each on the back) (Figure 1, Item 1).

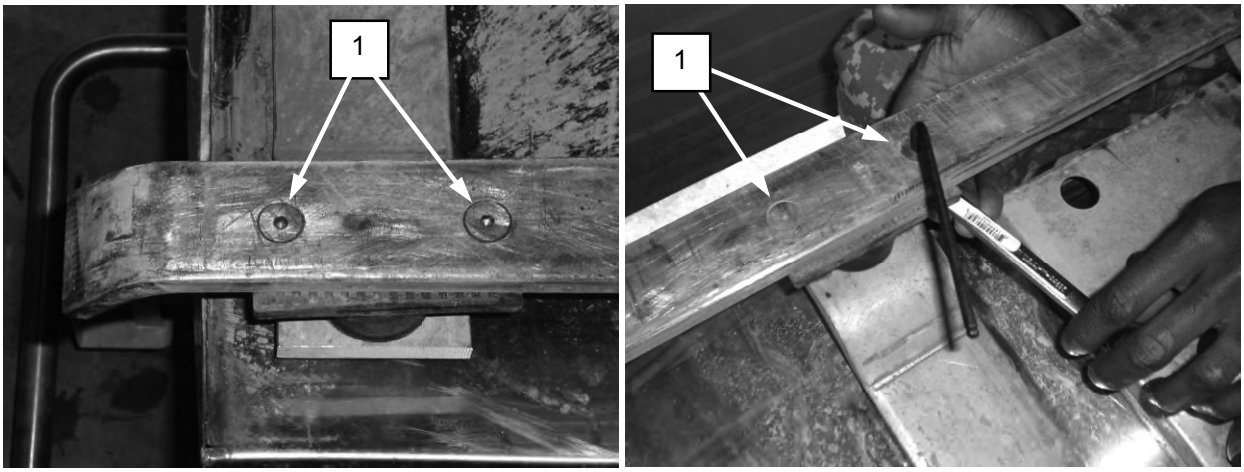


Figure 1. Removing Heater Skids.

REPLACE – CONTINUED

3. Remove skid.
4. Replace skid with a serviceable part from stock.
5. Replace four retaining bolts in bottom of skid (Figure 2, Item 1).

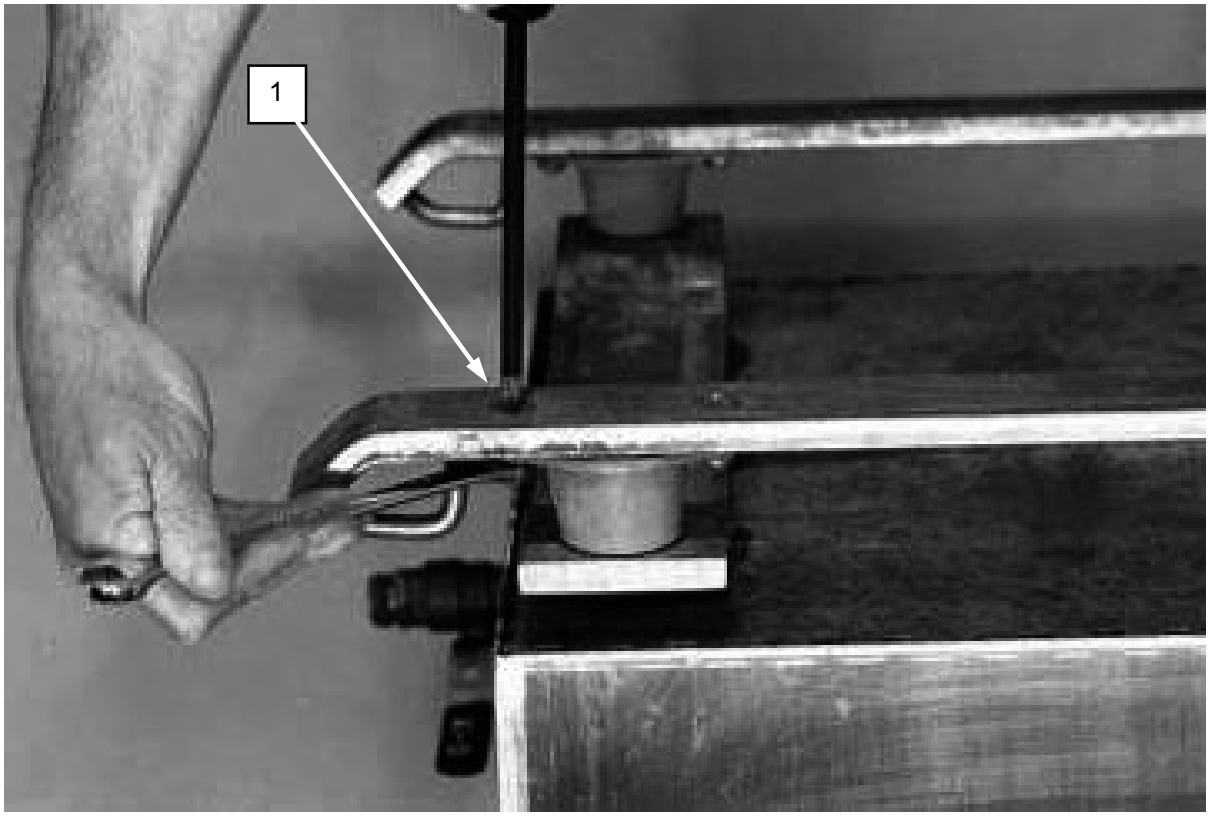


Figure 2. Removing Heater Skids.

6. Using a four-man lift, return the TRH to an upright position.
7. Install burner assembly and cover IAW WP 0026.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

SHOCK MOUNT
REPLACE

INITIAL SETUP:

Tools and Special Tools

Tool Kit, GMTK (WP 0069, Item 4)

Personnel Required

Quartermaster Equipment Repairer 91J (1) and Unspecified MOS (3)

Materials/Parts

Oil and Water Absorbent Material (WP 0069, Item 1)
Wiping Rag (WP 0069, Item 13)

Equipment Condition

TRH Burner removed from TRH (WP 0026)
TRH Tank empty and removed from vehicle

REPLACE

WARNING

The TRH weighs approximately 320 pounds when empty and 525 pounds when full. Proper lifting technique is required to prevent damage to equipment and personnel. Always drain water tank before lifting or moving TRH. Four (4) persons must be used to move the TRH onto its top, lifting with legs, not back, to prevent injury.

CAUTION

Do not use the lid handles to move the TRH, use the two lift bars on the TRH.

1. Using a four-person lift, turn the TRH over so that it is resting on its top, elevating the skids.

REPLACE – CONTINUED

2. Remove four retaining bolts, flat washers, and nuts from the bottom of the skid (two each on the front and two each on the back) (Figure 1, Item 1). Remove skids.

3. Remove two shock mount retaining bolts from top of shock mount (one on front shock mount and one on rear shock mount) (Figure 1, Item 2).

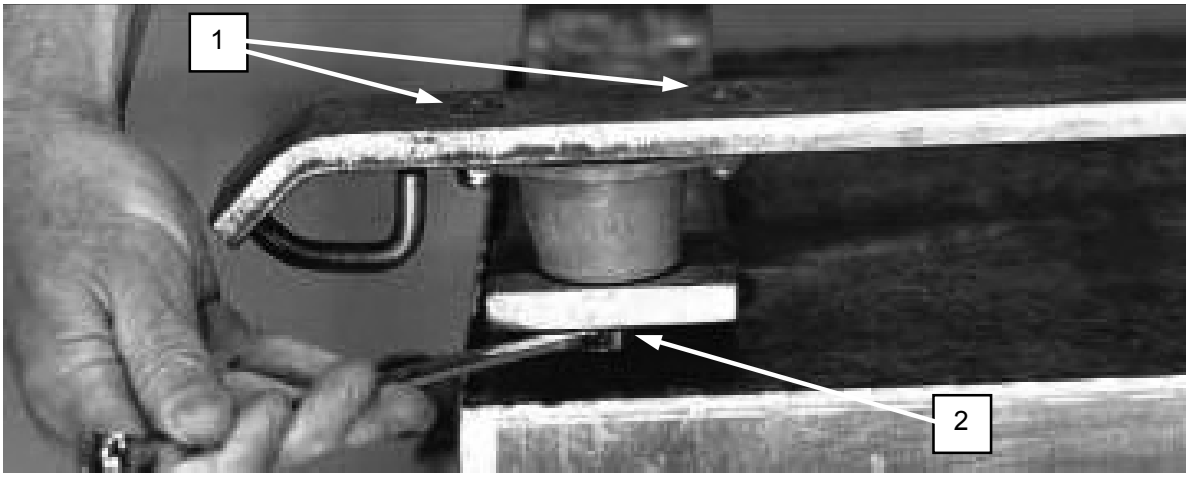


Figure 1. Removing Shock Mounts.

4. Remove shock mount and replace with a serviceable part from stock.

5. Replace two shock mount retaining bolts from top of shock mounts (one on front shock mount and one on rear shock mount) (Figure 2, Item 2). Hand tighten only.

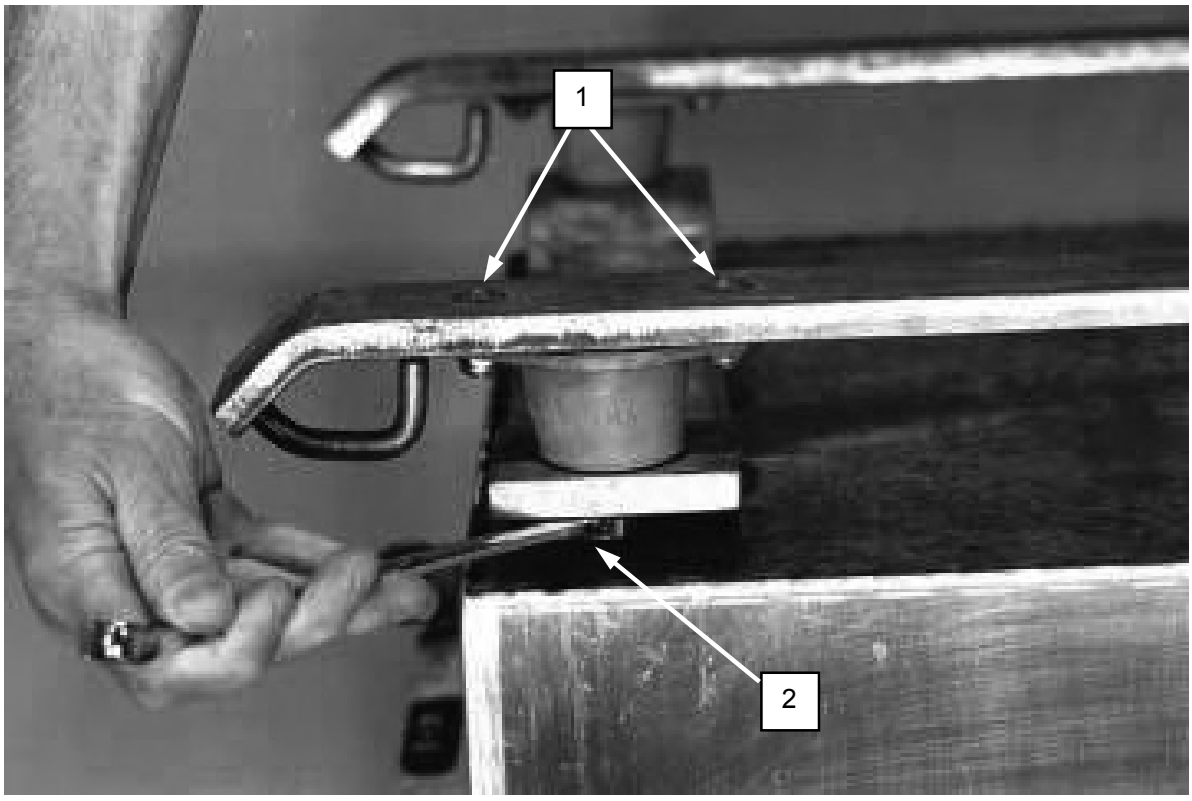


Figure 2. Removing Shock Mounts.

REPLACE – CONTINUED

6. Position skid on shock mounts.
7. Replace four retaining bolts in bottom of skid.
8. Wrench tighten shock mount bolts.
9. Using a four-man lift, return the TRH to an upright position.
10. Install burner assembly and cover IAW WP 0026.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

MULTI-FUEL BURNER REPAIR

INITIAL SETUP:

Tools and Special Tools

Tool Kit, GMTK (WP 0069, Item 4)

Materials/Parts

Chemical and Oil Protective Gloves (WP 0069, Item 9)
Industrial Goggles (WP 0069, Item 10)
Oil and Water Absorbent Material (WP 0069, Item 1)
Piston Assembly Parts Kit (WP 0057, Item 42)

Materials/Parts - continued

Wiping Rag (WP 0069, Item 13)

Personnel Required

Quartermaster Equipment Repairer 91J (1)

Equipment Condition

TRH Burner removed from TRH (WP 0026)

REPAIR

WARNING

Do not attempt to service a TRH Burner in the vicinity of any open flame. Prevent a possible fire hazard by having absorbent materials or fuel mats on hand to absorb any spillage. Failure to observe safety precautions may result in injury or death to personnel.

WARNING

Fuel under pressure can spray with great force. Keep eyes and skin protected from fuel contamination with goggles, gloves and protective clothing. Failure to do so may result in injury or death to personnel.

Damage to the TRH Burner may not be detected through troubleshooting procedures or visual inspection of the TRH burner. If a TRH burner experiences difficulty operating after completion of the troubleshooting process, use the following procedures to breakdown and inspect the TRH burner. Replace any components showing obvious signs of damage.

REPAIR - CONTINUED

Burner Disassembly

NOTE

Ensure that fuel has been drained from the TRH burner IAW WP 0026.

1. Unscrew control box retaining screw (Figure 1, Item 1) and remove the control box.

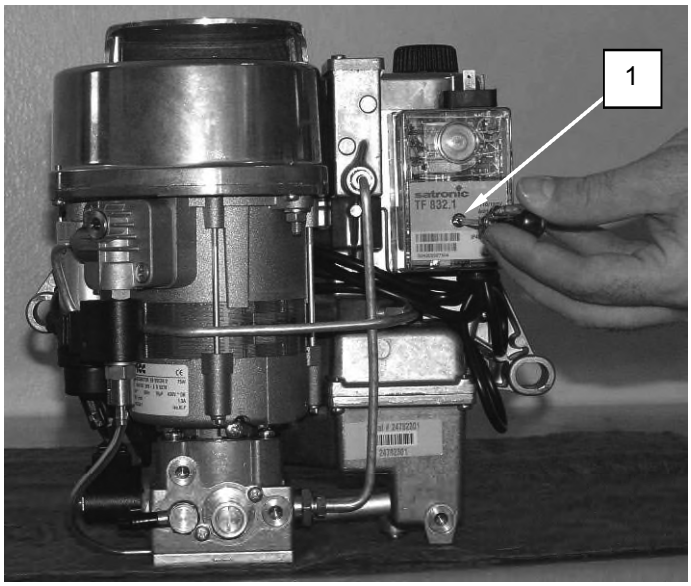


Figure 1. Control Box Removal and Fuel Drainage.

NOTE

The air tube may occasionally separate from the flame tube. If this happens, remove flame tube from atomizing chamber.

2. Remove the front flange of the lower fan housing by removing the four screws (Figure 2, Item 4) to expose the atomizing chamber (Figure 2, Item 3). It is not necessary to remove the air tube/flame tube assembly (Figure 2, Item 2) from the front flange (Figure 2, Item 1).

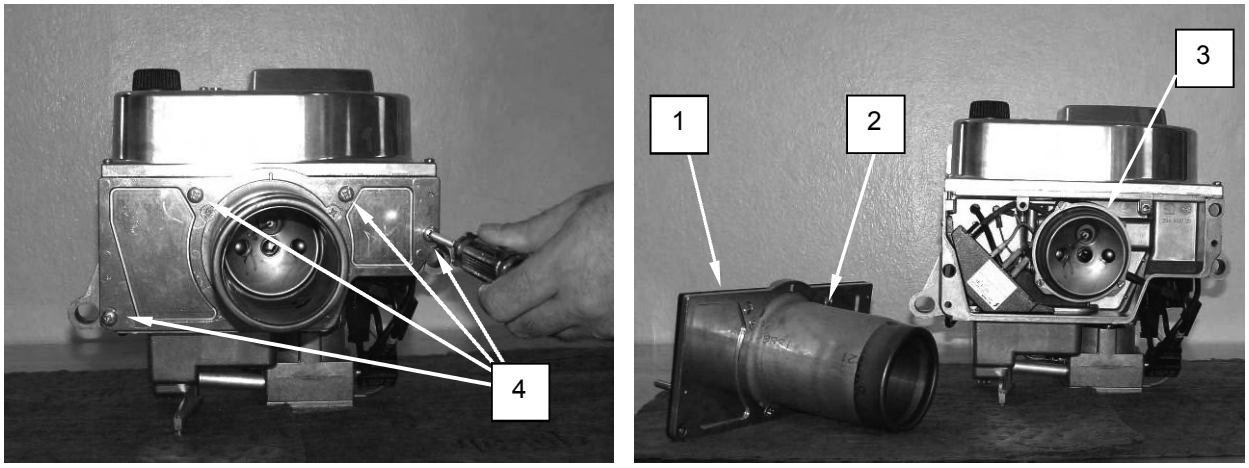


Figure 2. Lower Fan Housing Flange Removal.

REPAIR - CONTINUED

3. Removal and installation of the atomizing chamber does not require tools. Remove the atomizing chamber by pulling directly out (Figure 3, Item 1). Once removed, pull the igniter cable spade connector from the ignition transformer (Figure 3, Item 2).

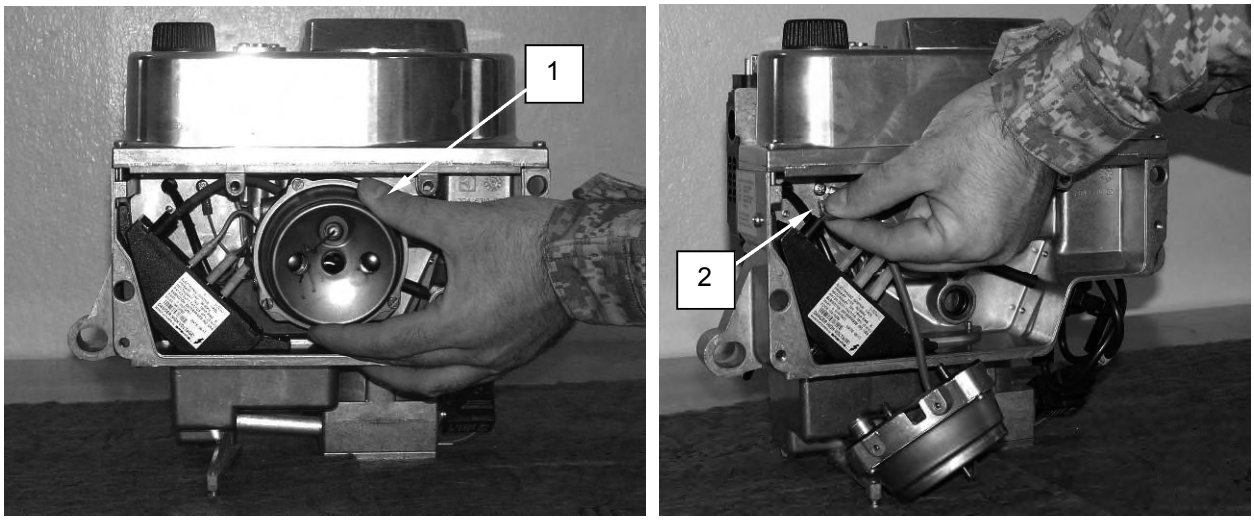


Figure 3. Atomizing Chamber Removal.

4. Place atomizing chamber in protective container to prevent dirt intrusion.

5. Turn burner upside down and disconnect primer port tubing at base of fuel pump (Figure 4, Item 2).

6. Remove primer port connector from the base of the air solenoid with the adjustable wrench (Figure 4, Item 1).

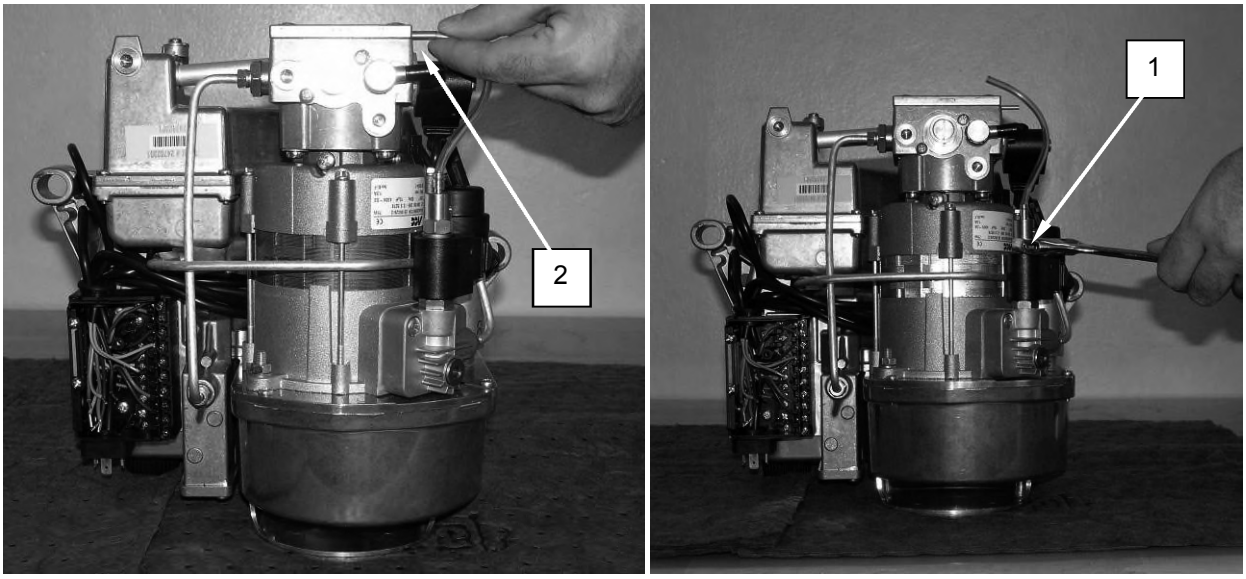


Figure 4. Primer Port Tubing and Primer Port Connector Removal.

REPAIR - CONTINUED

7. Remove air solenoid washers from air solenoid coil (Figure 5, Item 1).

8. Remove air solenoid coil from valve body (Figure 5, Item 2).

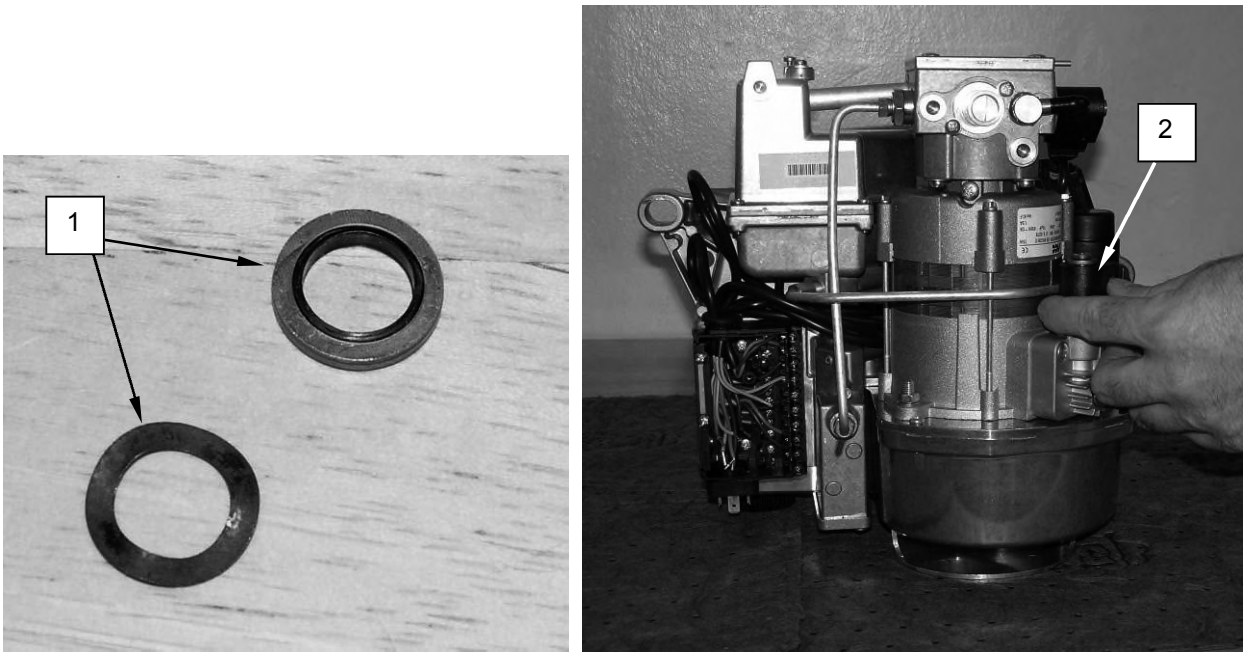


Figure 5. Air Solenoid Coil and Air Solenoid Removal.

9. Tag and unplug air solenoid from power cable (Figure 6, Item 1).

10. Unscrew hex nuts on opposite ends of metal air line (Figure 6, Item 2) that leads from the air compressor.

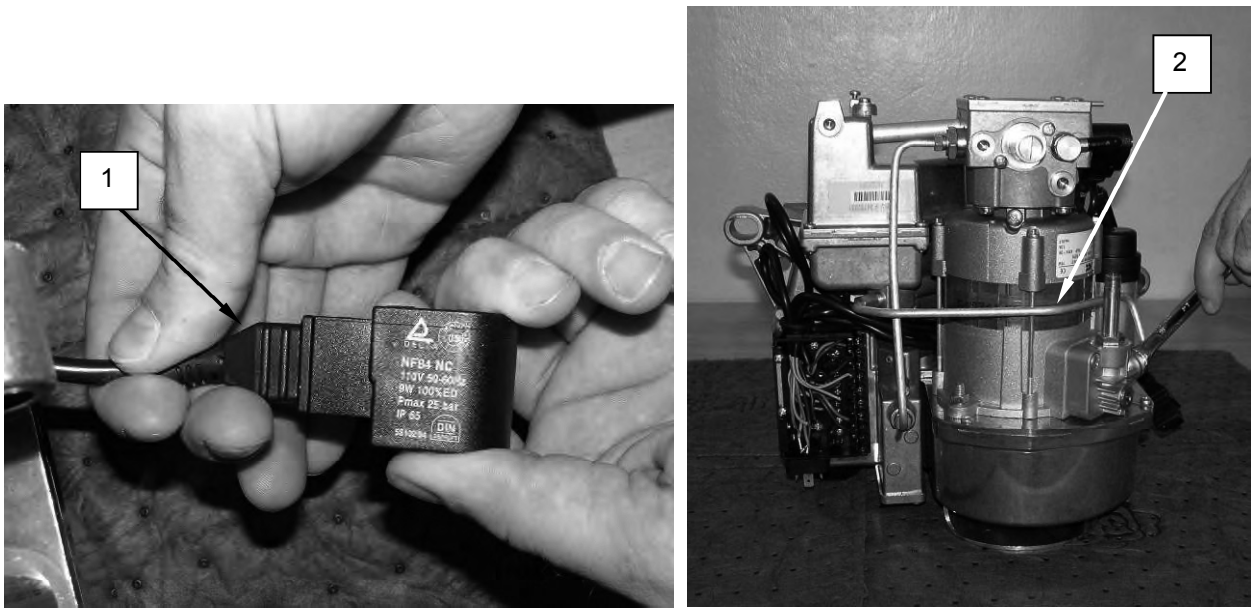


Figure 6. Air Solenoid Coil and Air Line Removal.

REPAIR – CONTINUED

11. Remove the metal air line (Figure 7, Item 1) and set in a clean place.
12. Unscrew both metal fuel line connections and remove the metal fuel line (Figure 7, Item 2).
13. Remove five screws that hold the fuel sump to the lower fan housing (Figure 7, Item 4 and Item 3).

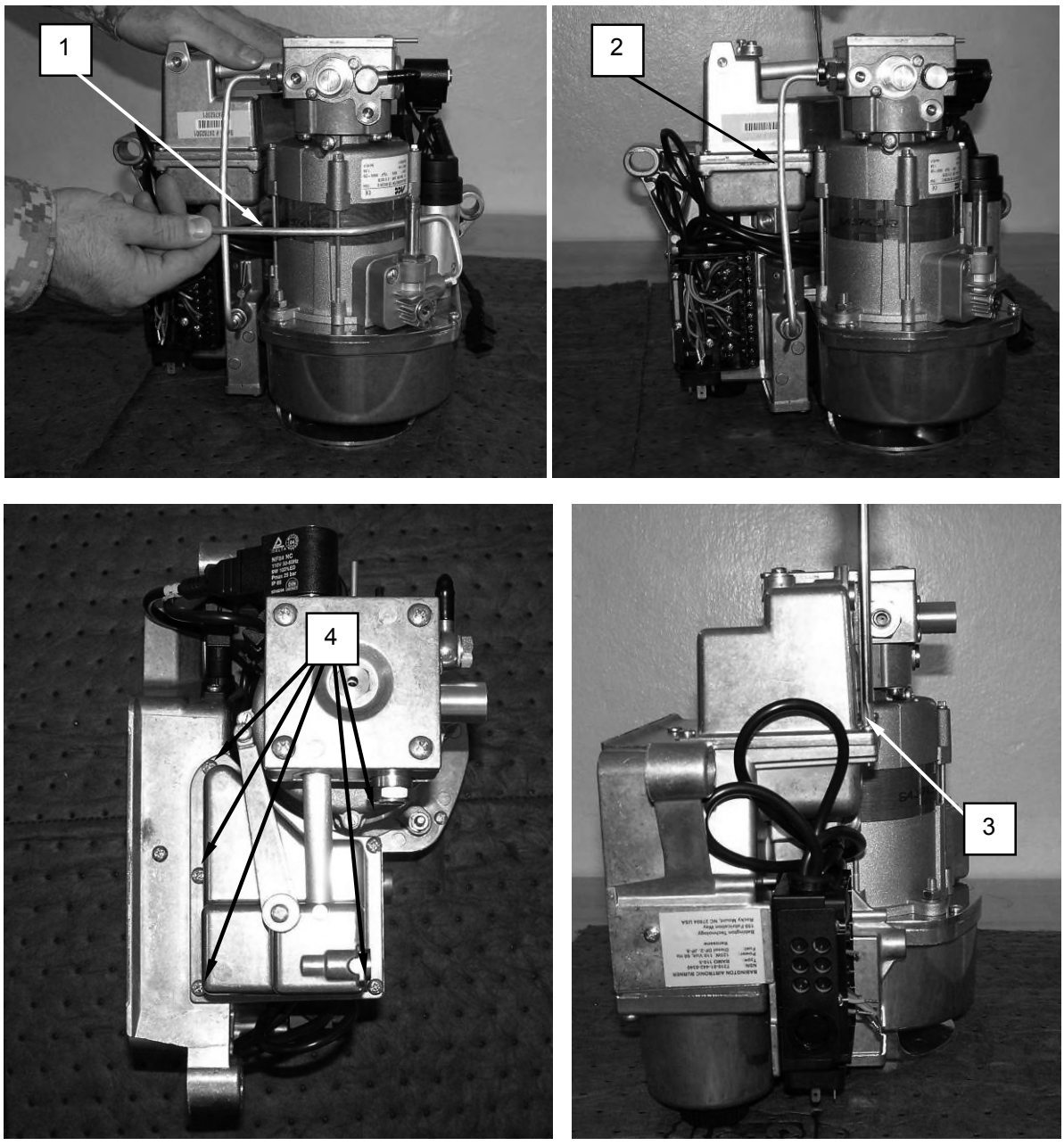


Figure 7. Air Line, Fuel Line, and Fuel Sump Removal.

REPAIR – CONTINUED

14. While gently twisting the fuel crossover tube (Figure 8, Item 2), slowly slide the sump (Figure 8, Item 1) horizontally away from the pump to disengage the fuel crossover tube from the sump pump (Figure 8, Item 3), taking care not to damage the overflow safety device. Remove the fuel sump (Figure 8, Item 1) and crossover tube (Figure 8, Item 2).

15. Tag and disconnect fuel solenoid power cable (Figure 8, Item 5) from fuel solenoid coil (Figure 8, Item 4).

16. Remove fuel solenoid coil retaining nut (Figure 8, Item 8) from pump fuel solenoid coil.

17. Remove fuel solenoid coil (Figure 8, Item 7).

NOTE

The side panel of the burner control box base may be removed for ease of access.

NOTE

Before disconnecting TRH Burner wires, tag the wires to aid installation procedures.

18. Disconnect all wires from the burner control box base (Figure 8, Item 6).

19. Pull control box wires through access hole in bottom of control box.

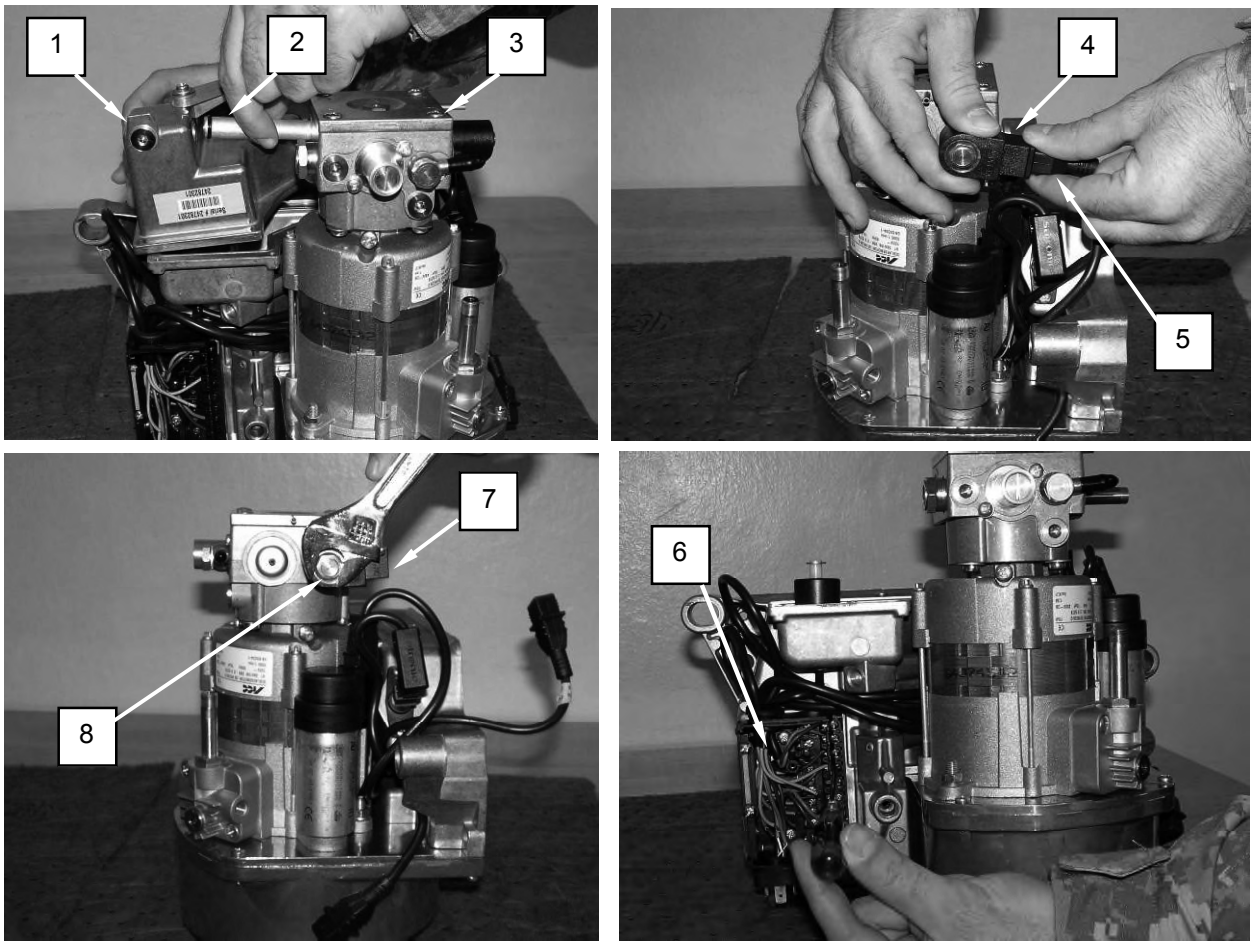


Figure 8. Fuel Sump and Fuel Solenoid Power Cable.

REPAIR – CONTINUED

20. Pull photocell (Figure 9, Item 2) straight out from photocell base (Figure 9, Item 3).

21. Push detent button to disconnect photocell (Figure 9, Item 3) from photocell power cable (Figure 9, Item 1).

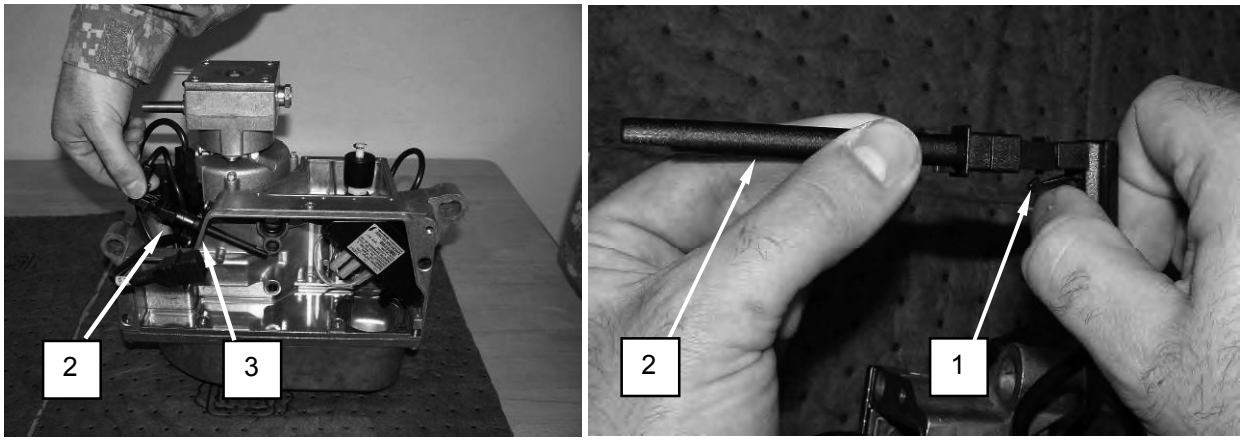


Figure 9. Photocell and Power Pack Removal.

22. Remove the two hex nuts (Figure 10, Item 1 and Item 2) and flat washers, which hold the motor mounts to the upper fan housing, from their posts.

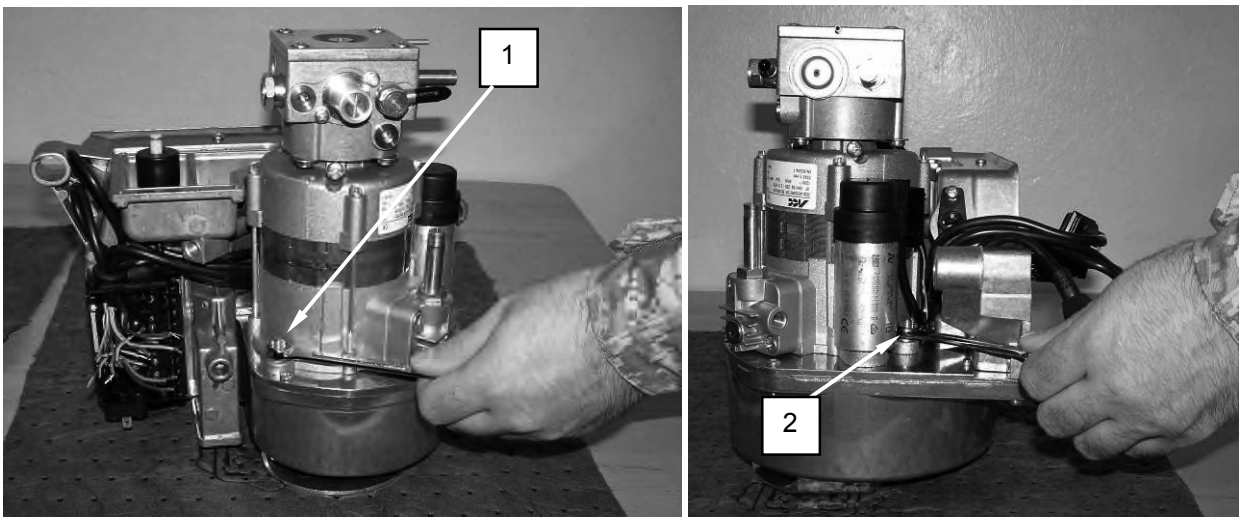


Figure 10. Photocell and Power Pack Removal.

REPAIR – CONTINUED

23. Remove motor power cable (Figure 11, Item 1).

24. Remove the entire power pack (consisting of the motor, compressor, fuel pump, and blower wheel) (Figure 11, Item 2).

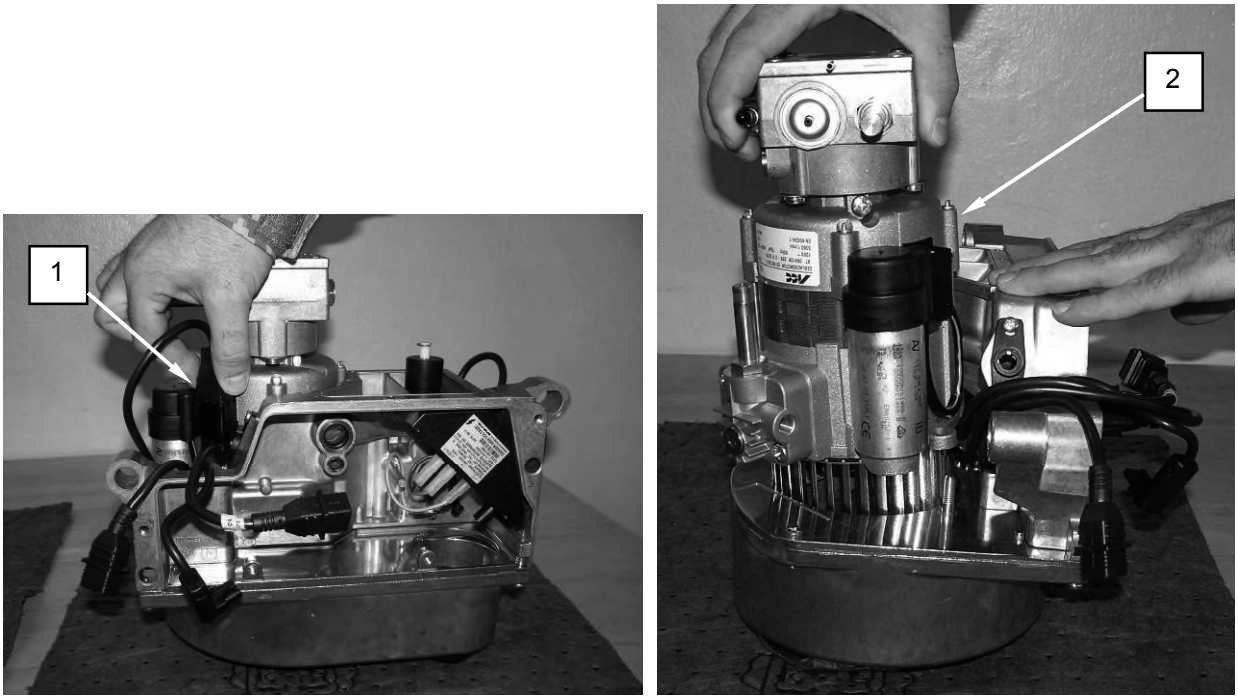


Figure 11. Photocell and Power Pack Removal.

25. Remove two screws retaining photocell base and remove the photocell base (Figure 12, Item 1).

26. Remove two screws holding control box base (Figure 12, Item 2) to lower fan housing.

27. Remove control box base (Figure 12, Item 2).

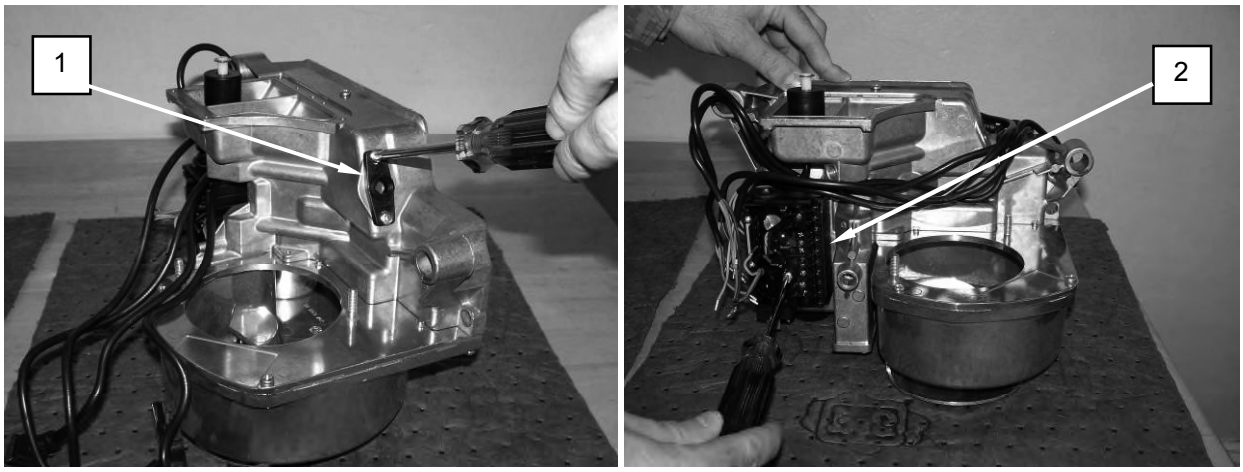


Figure 12. Photocell Base and Control Box Base Removal.

REPAIR – CONTINUED

28. Remove overflow safety float switch retaining clip (Figure 13, Item 1). If necessary, use a small flat-tip screwdriver to pry off the retaining clip.

29. Pull the overflow safety float (Figure 13, Item 2) out of the lower housing assembly.

30. Unscrew the overflow safety float sensor (Figure 13, Item 4).

31. Remove the overflow safety float switch retaining nut (Figure 13, Item 3) and O-ring.

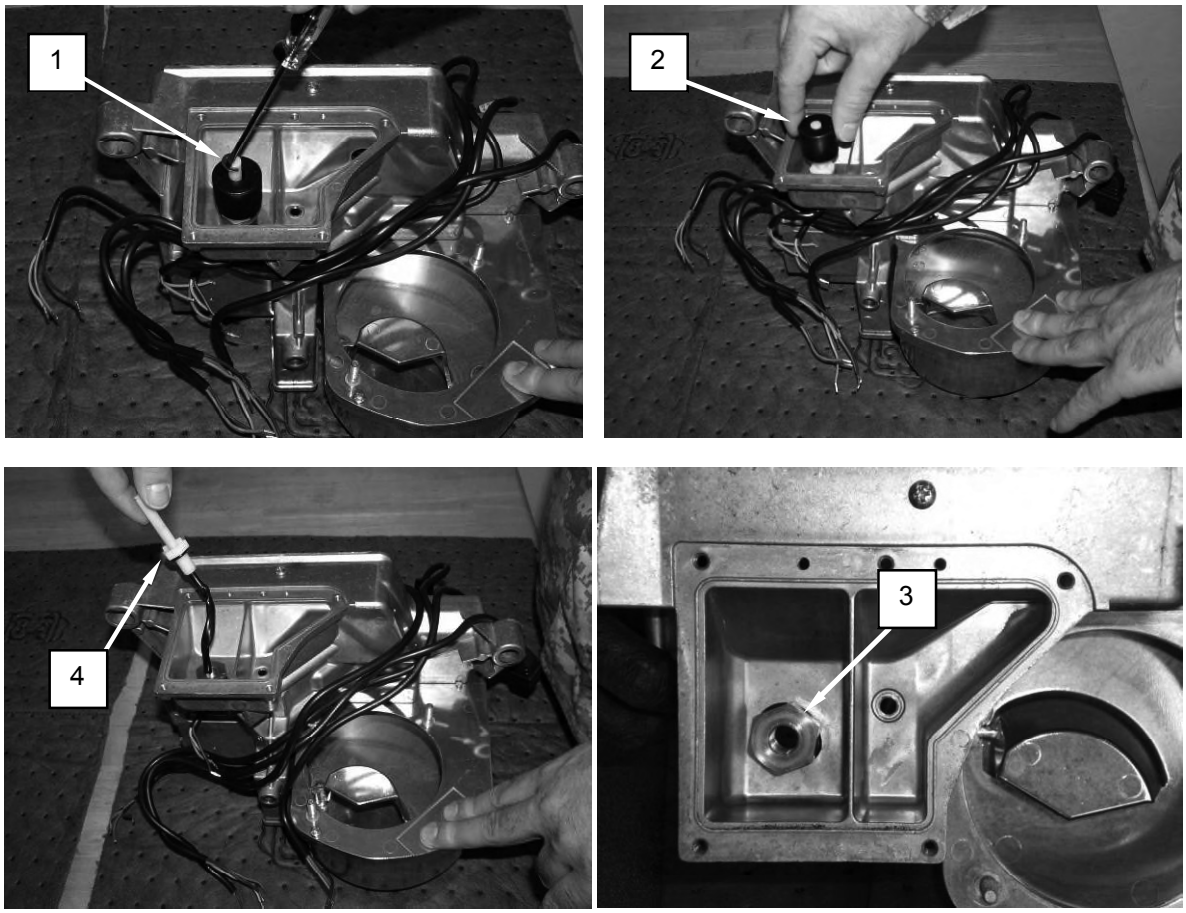


Figure 13. Overflow Safety Device Removal.

REPAIR – CONTINUED

32. Disconnect spade connections (Figure 14, Item 2) from ignition transformer (Figure 14, Item 1). If necessary, use a flat-tip screwdriver to pry off spade connections.

33. Remove ignition transformer retaining screws (Figure 14, Item 3 and Item 5).

34. Remove ground wire retaining screw (Figure 14, Item 5) and ignition transformer.

35. Remove power cable and ground wire from lower fan housing.

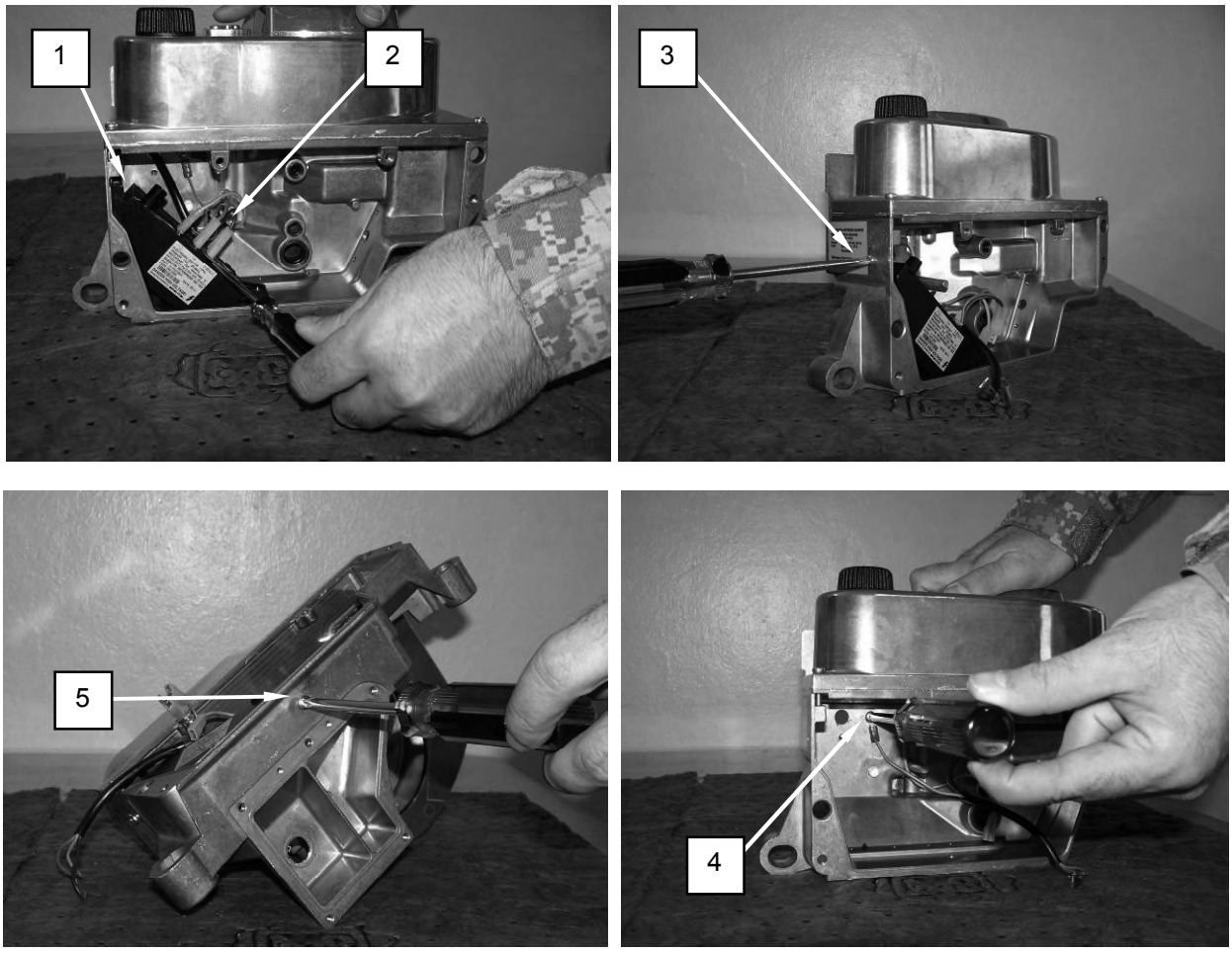


Figure 14. Spade Connection and Transformer Retaining Screw Removal.

REPAIR – CONTINUED

36. Remove four screws that retain upper fan housing to intermediate motor mounting plate (two screws on both sides) (Figure 15, Items 7 and 1).

37. Separate upper fan housing (Figure 15, Item 5) and intermediate motor mounting plate (Figure 15, Item 6).

38. Remove blower control knob retaining screw (Figure 15, Item 2).

39. Remove blower control knob (Figure 15, Item 3).

40. Remove blower control knob printed index (Figure 15, Item 4).

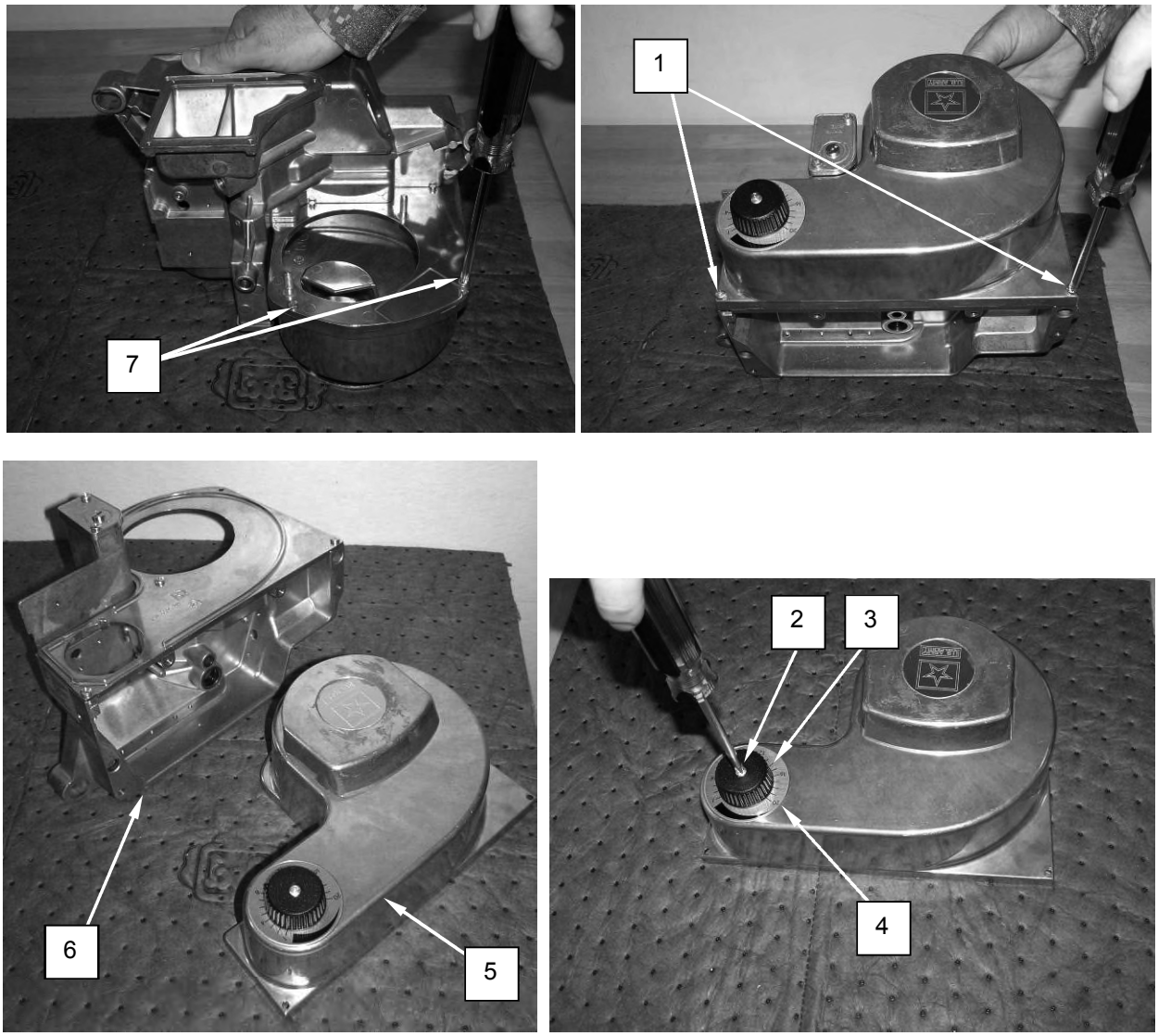


Figure 15. Upper Fan Housing and Blower Control Knob Removal.

REPAIR – CONTINUED

41. Remove blower-regulating scroll from upper fan housing (Figure 16, Item 1).

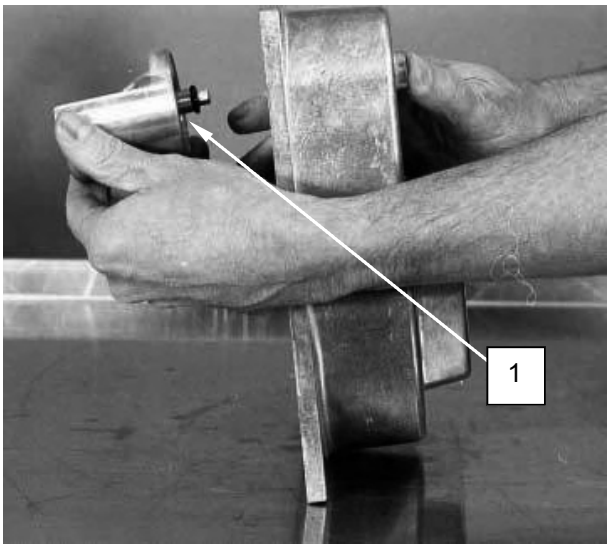


Figure 16. Blower Regulating Scroll Removal.

42. Remove the two screws (Figure 17, Item 1) retaining the cover from the flow control module.

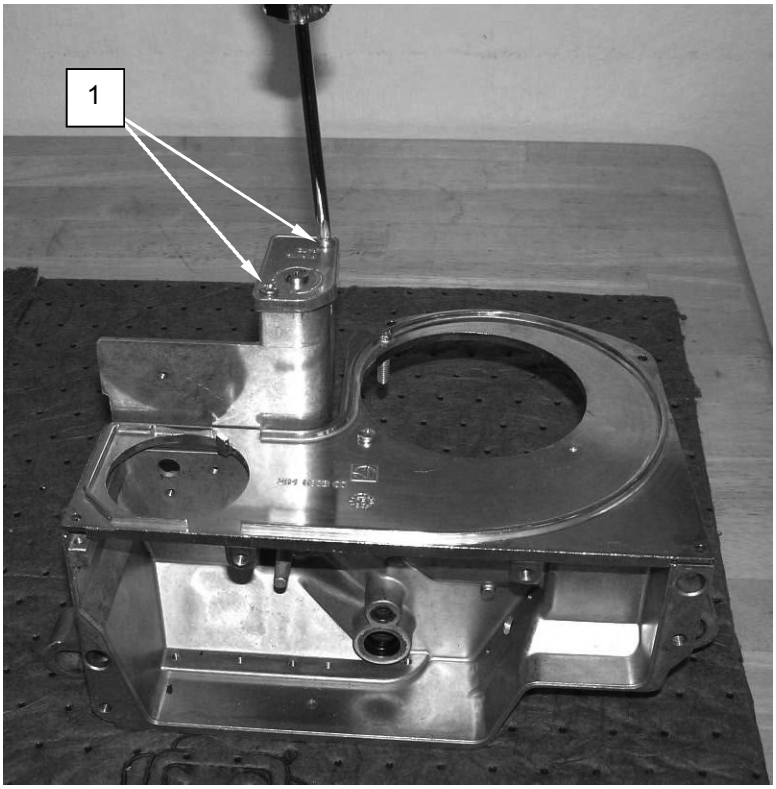


Figure 17. Air Inlet Cover Removal.

REPAIR – CONTINUED

43. Remove flow control module cover (Figure 18, Item 1).

44. Remove flow control knob and cam (Figure 18, Item 3) by pushing flow control knob through the flow control module cover (Figure 18, Item 2).

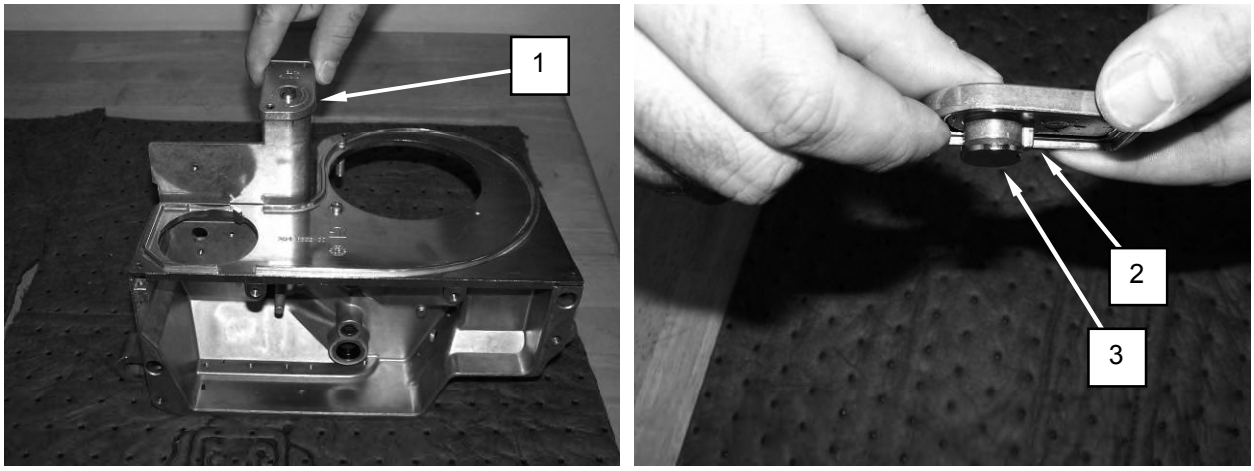


Figure 18. Flow Control Module Removal.

45. Loosen two retaining screws (Figure 19, Item 1) that secure the pump assembly.

46. Lift out pump assembly (Figure 19, Item 2).

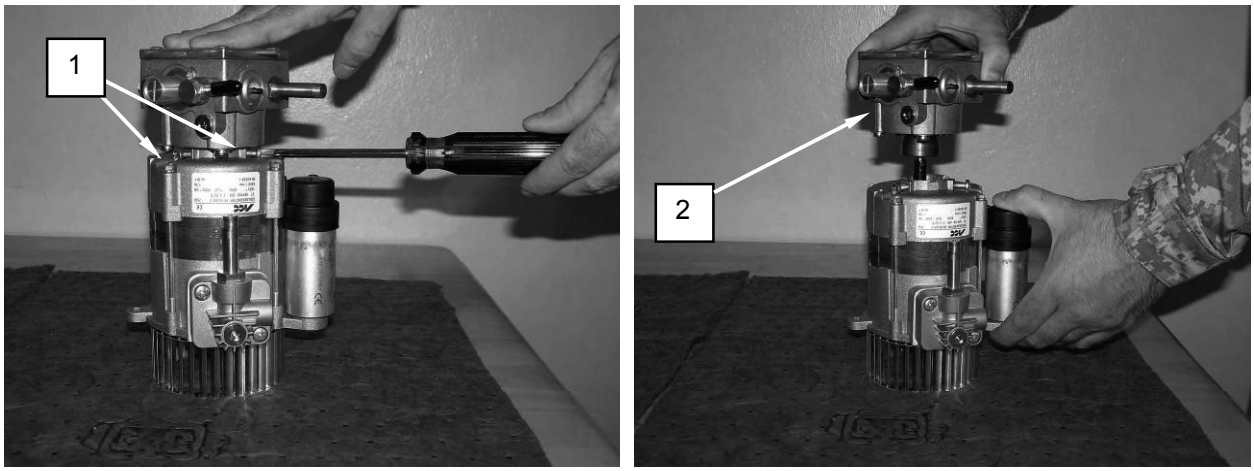


Figure 19. Pump Assembly Removal.

REPAIR – CONTINUED

NOTE

The fuel solenoid body has a spring, plunger, and guide inside. Ensure that parts do not get lost.

47. Remove the nylon pump coupling (Figure 20, Item 1) from the pump shaft.

48. Remove fuel solenoid post (Figure 20, Item 2).

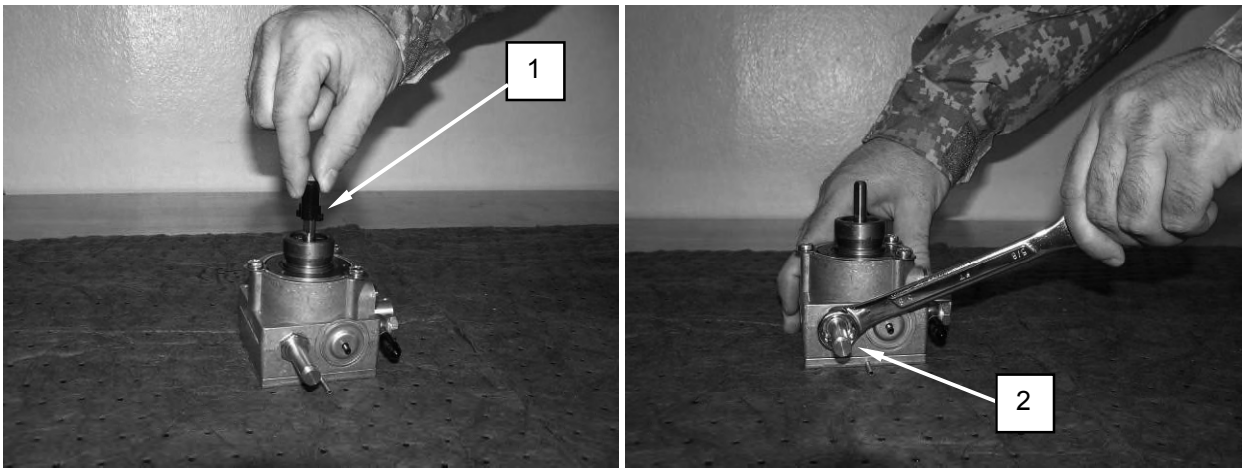


Figure 20. Pump Coupling and Fuel Solenoid Removal.

49. Loosen blower wheel retaining set screw (Figure 21, Item 1).

50. Remove blower wheel (Figure 21, Item 2).

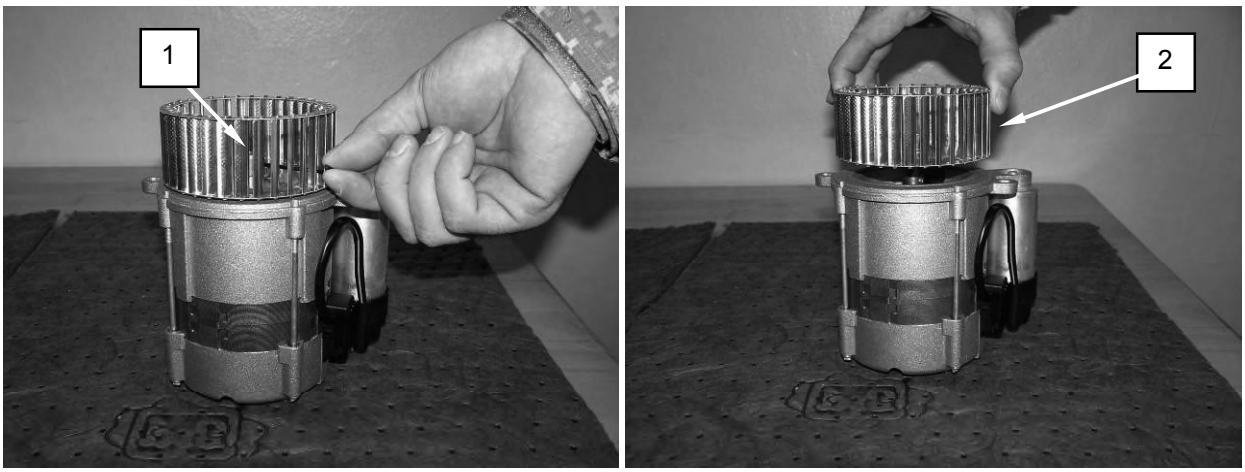


Figure 21. Blower Wheel Removal.

REPAIR – CONTINUED

51. Remove air compressor filter plug (Figure 22, Item 1) and O-ring.

52. Remove small compressor air filter by pulling lightly with needle-nose pliers (Figure 22, Item 2).

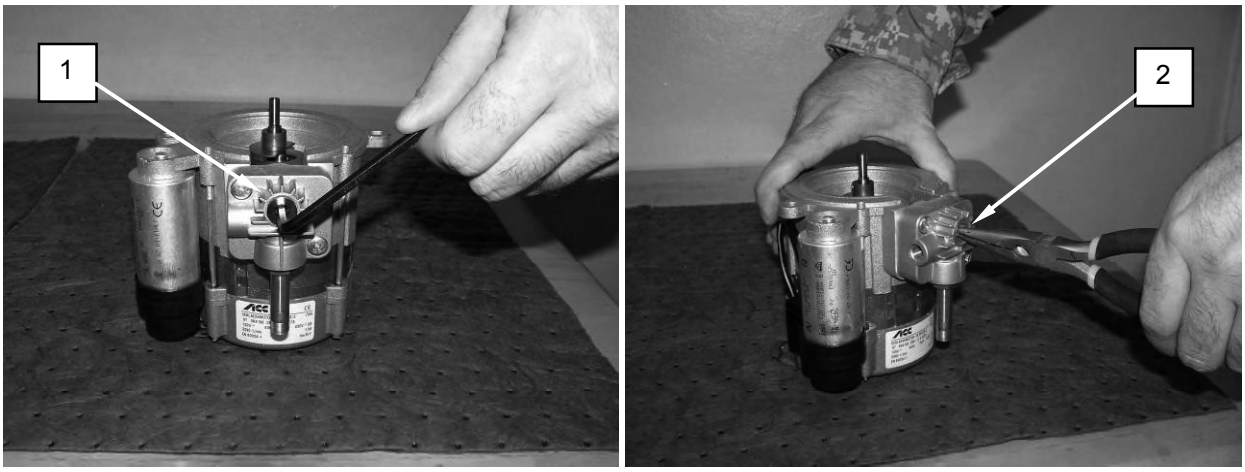


Figure 22. Compressor Air Filter Removal.

53. Loosen and remove air solenoid body (Figure 23, Item 2).

54. Remove compressor head mounting screws (Figure 23, Item 1).

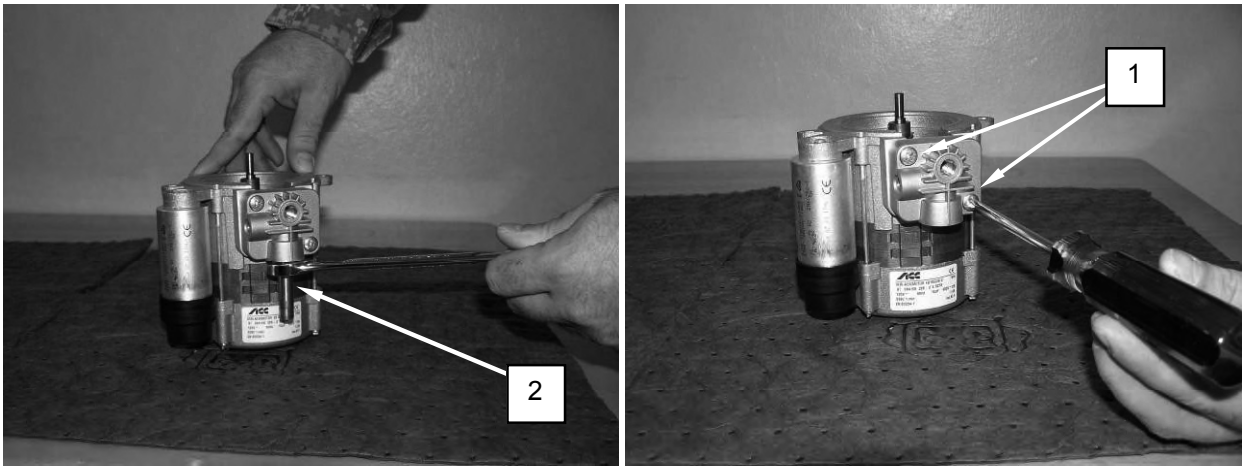


Figure 23. Solenoid and Compressor Removal.

REPAIR – CONTINUED

55. Remove compressor head and shim (Figure 24, Item 2), if included.

NOTE

Only remove the compressor piston ring and O-ring if necessary to replace. A new piston O-ring and compressor piston ring must be used.

56. Remove compressor piston ring (Figure 24, Item 1) to expose compressor piston O-Ring.

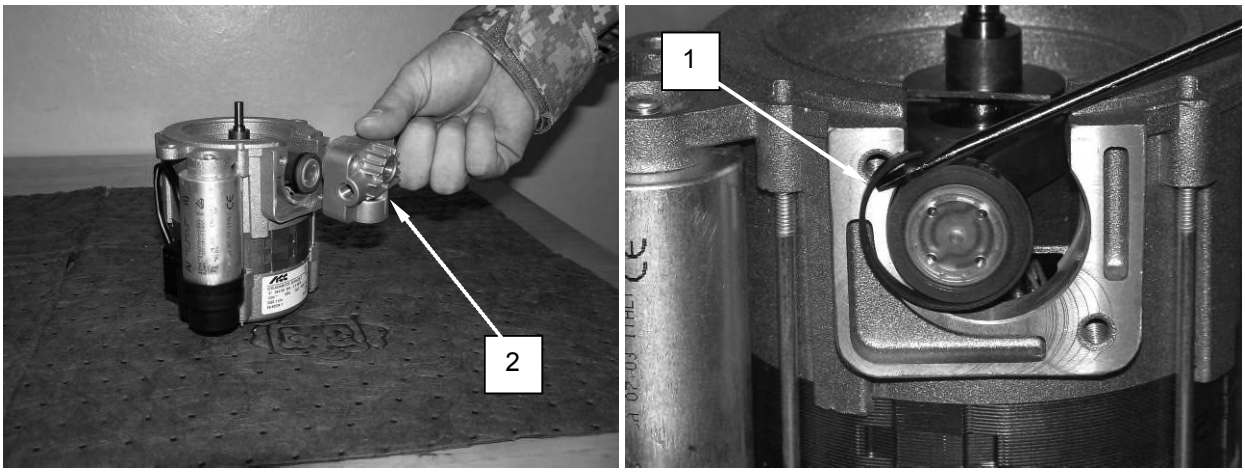


Figure 24. Compressor Head and Piston Ring Removal.

57. Remove piston O-Ring (Figure 25, Item 1) and set aside.

Figure 25. Piston O-Ring Removal.

END OF TASK

REPAIR – CONTINUED

Burner Reassembly

1. If removed, replace compressor piston O-ring with new item from stock, being careful not to damage or tear the piston O-Ring (Figure 26, Item 1).

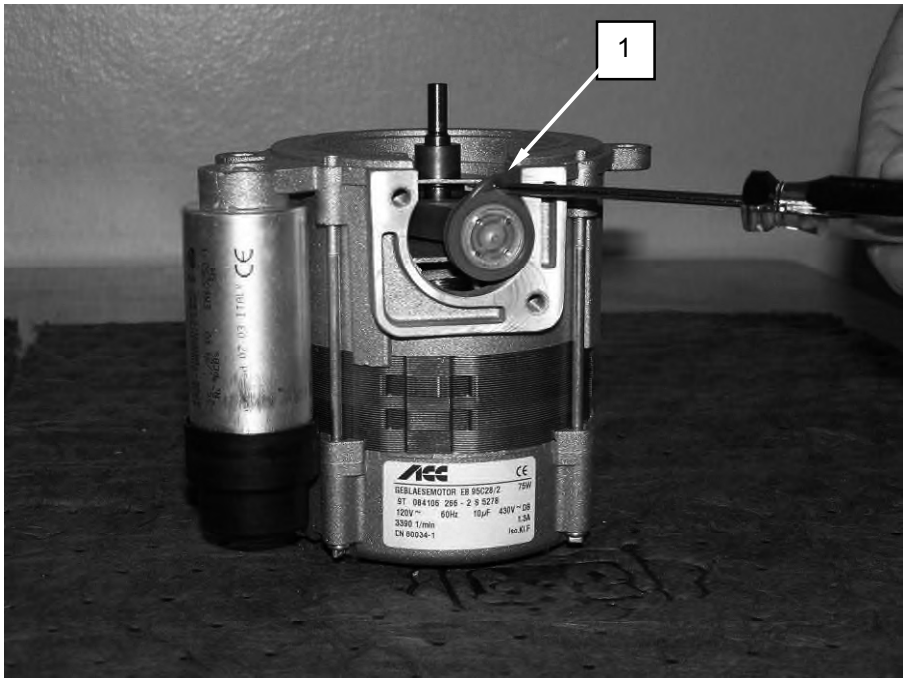


Figure 26. Replacing the Piston O-Ring.

2. If removed, replace compressor piston ring (Figure 27, Item 2) with new item from stock, over piston O-ring.

3. Install the compressor head and shim, if equipped (Figure 27, Item 1).

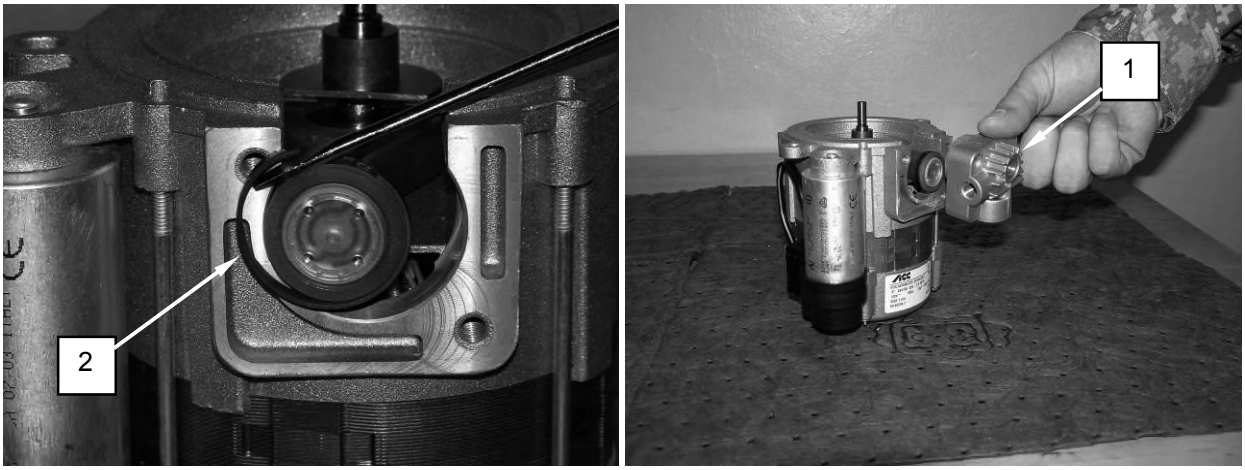


Figure 27. Compressor Head and Piston Ring Replacement.

REPAIR – CONTINUED

4. Install two compressor head mounting screws (Figure 28, Item 1).

NOTE

The air solenoid has a hole at the tip. The fuel solenoid does not.

5. Install and tighten air solenoid body (Figure 28, Item 2). Do not over tighten.

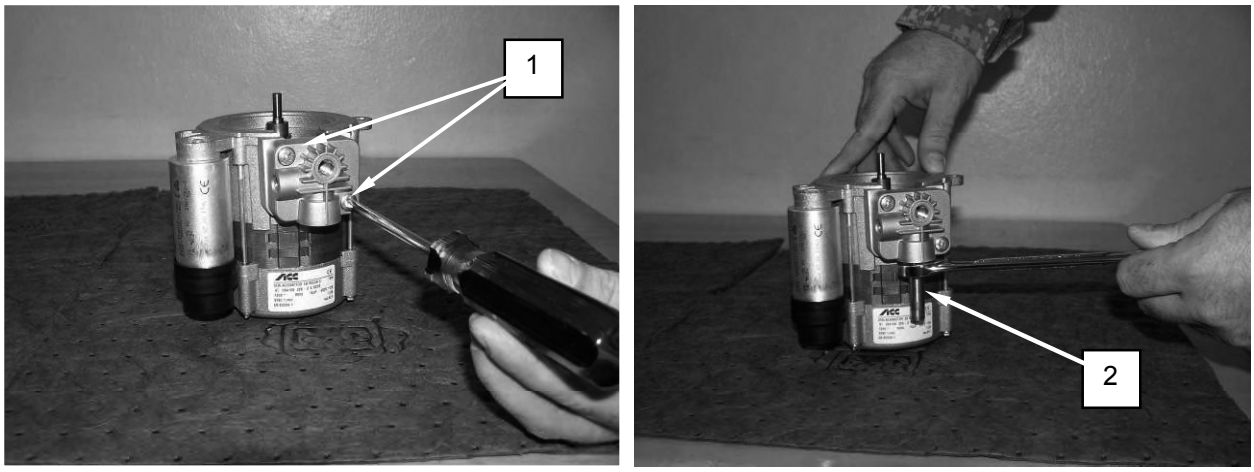


Figure 28. Solenoid and Compressor Replacement.

NOTE

The compressor air filter will fit in both holes on the compressor. Ensure placement in the proper hole.

6. Install small compressor air filter by pushing lightly with needle-nose pliers (Figure 29, Item 2).

7. Install air compressor filter plug (Figure 29, Item 1) and O-ring. Do not over tighten.

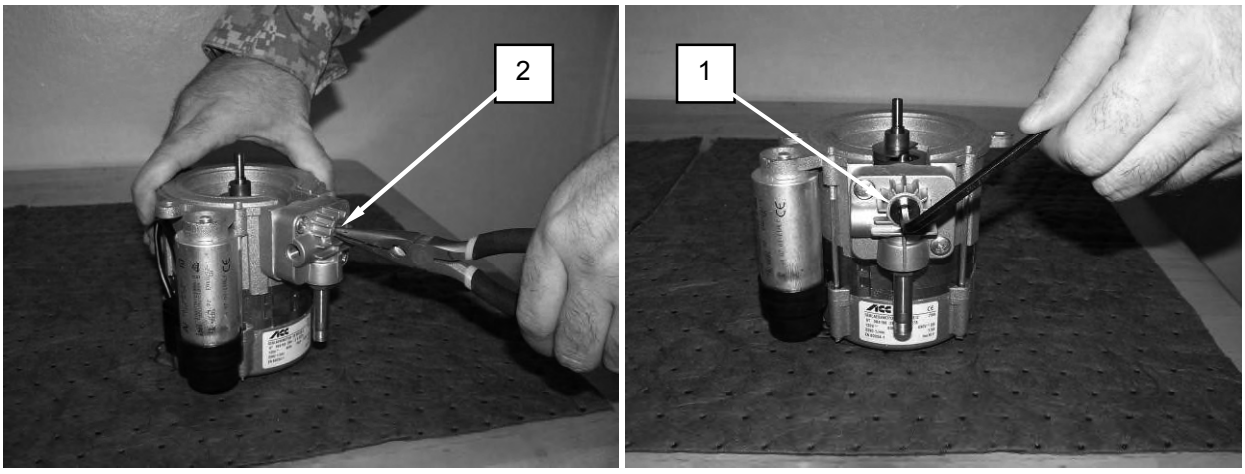


Figure 29. Compressor Air Filter Replacement.

REPAIR – CONTINUED

8. Install the blower wheel (Figure 30, Item 1) by placing it back over the shaft. Ensuring that the screw will tighten against the flat spot on the shaft.

9. Tighten blower wheel retaining set screw (Figure 30, Item 2).

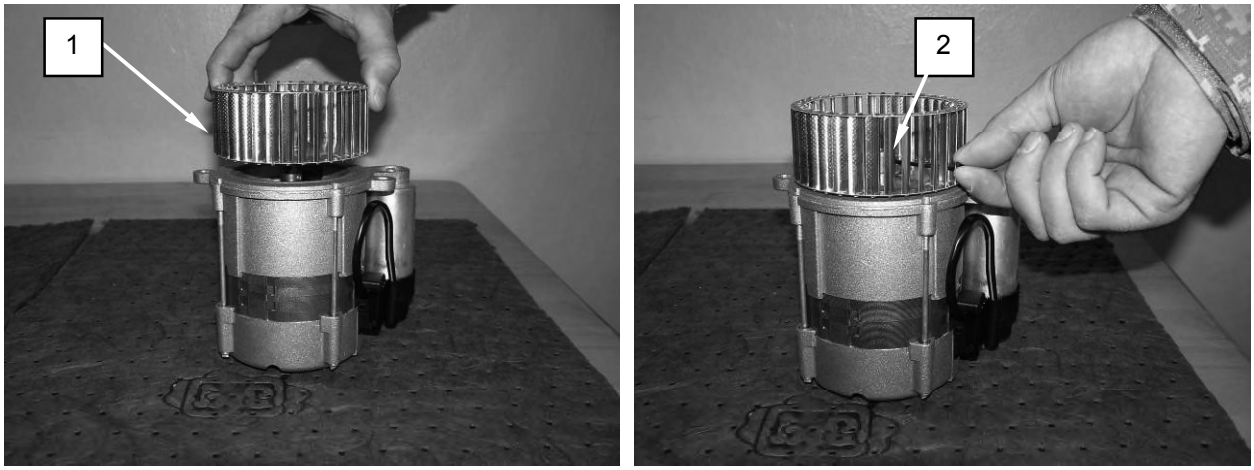


Figure 30. Blower Wheel Replacement.

10. Install fuel solenoid body and tighten (Figure 31, Item 1), ensuring proper O-ring placement. Do not over tighten.

11. Install nylon pump coupling on pump shaft. Ensure that the flat side of the shaft coordinates with the slot on the pump coupling (Figure 31, Item 2).

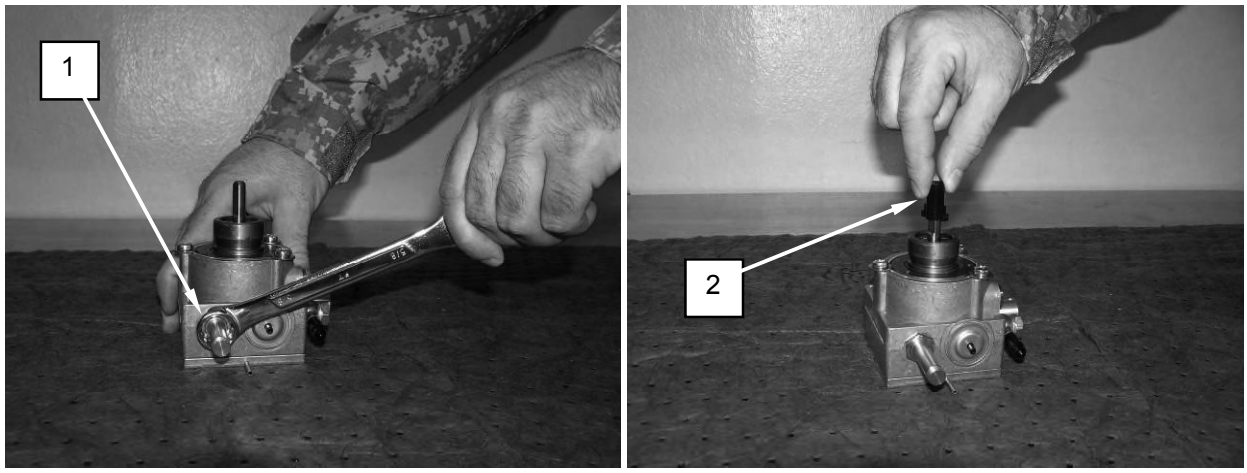


Figure 31. Pump Coupling and Fuel Solenoid Replacement.

REPAIR – CONTINUED

12. Install pump assembly onto pump shaft ensuring that the nylon teeth line up with the pump assembly. If necessary, rotate the blower fan until the pump assembly slides all the way against the motor. Align the corner of the pump assembly to the right of the primer port connection with the air solenoid body (Figure 32, Item 2).

13. Tighten the pump retaining screws (Figure 32, Item 1) until seated.

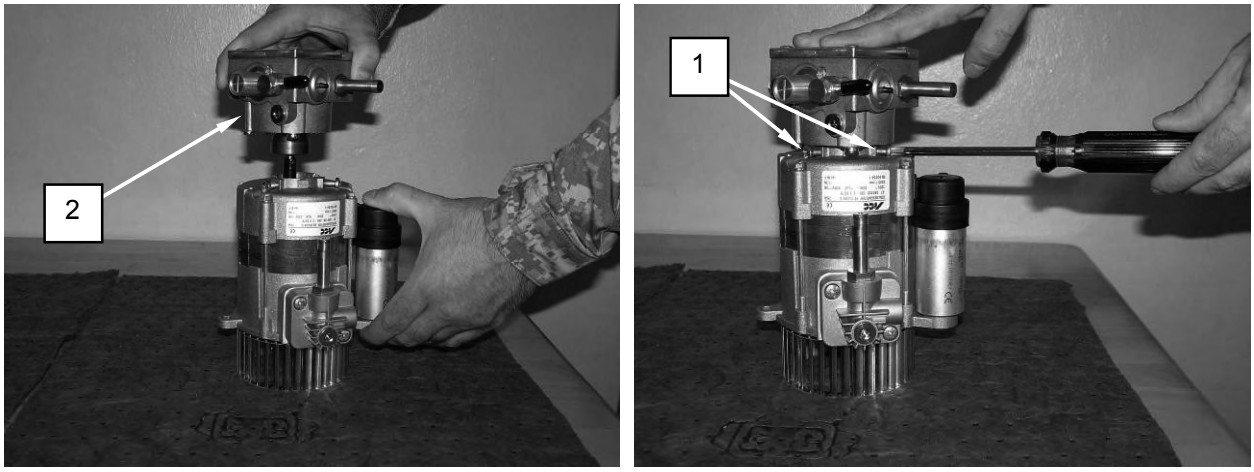


Figure 32. Pump Assembly Replacement.

14. Install flow control module insert, insuring small O-ring seal is between insert and lower fan housing.

15. Insert fuel regulating cam (Figure 33, Item 3) back into flow control module cover (Figure 33, Item 2).

16. Install flow control module cover (Figure 33, Item 1).

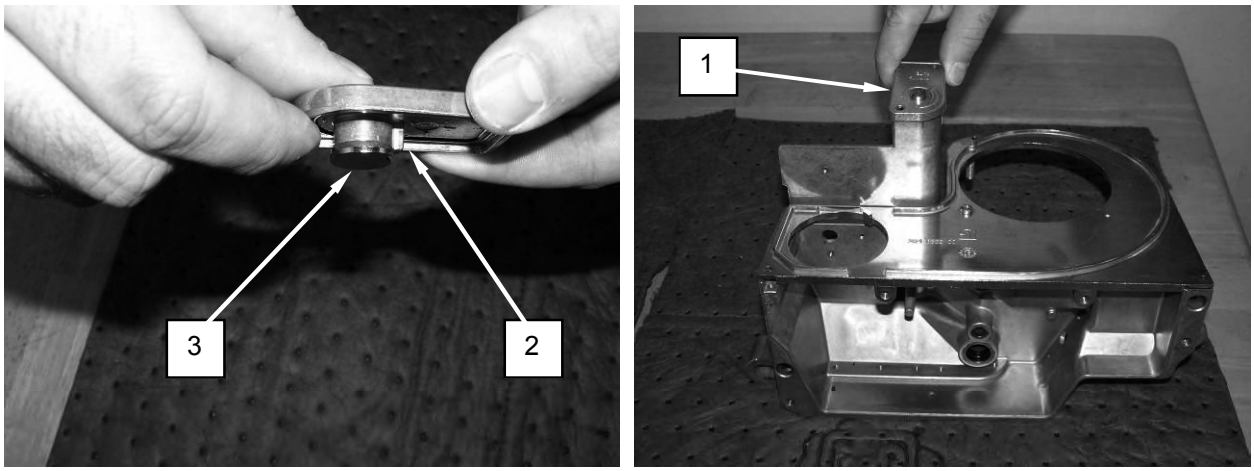


Figure 33. Flow Control Module Replacement.

REPAIR – CONTINUED

17. Install and tighten the two screws to secure the flow control module cover (Figure 34, Item 1).

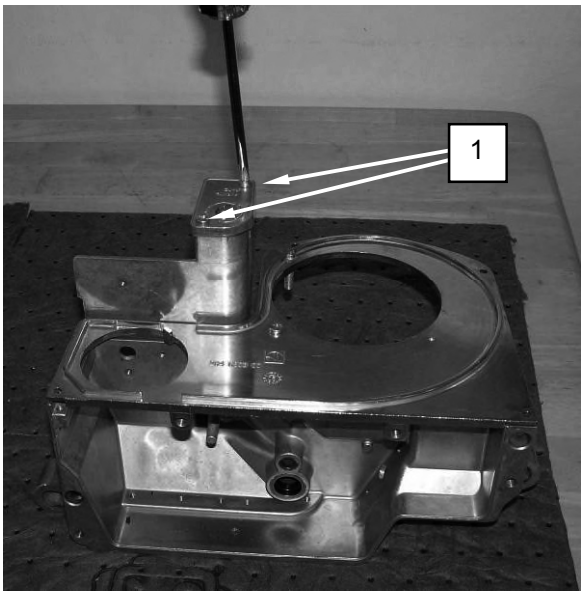


Figure 34. Flow Control Module Cover Replacement.

18. Install blower-regulating scroll into upper fan housing (Figure 35, Item 1), including both O-rings.

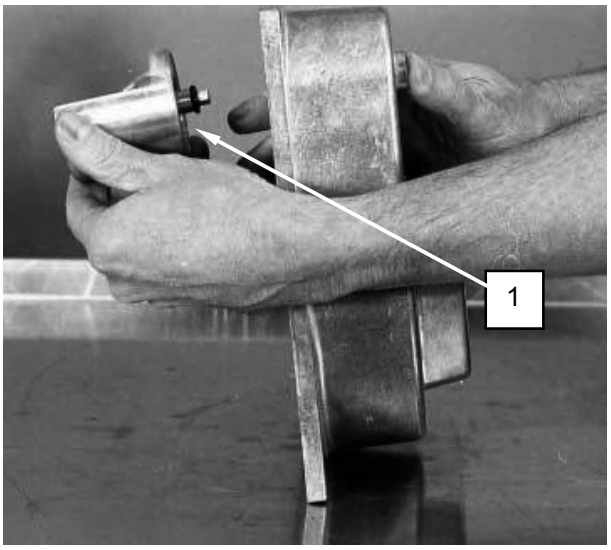


Figure 35. Blower Regulating Scroll Replacement.

REPAIR – CONTINUED

19. Install blower control knob printed index (Figure 36, Item 3) by aligning tab on index with tab on upper fan housing.

20. Install blower control knob (Figure 36, Item 4) by aligning flat side of control knob with flat side of blower-regulating scroll knob.

21. Tighten the blower control knob retaining screw (Figure 36, Item 5). Do not over tighten.

22. Place intermediate motor mounting plate (Figure 36, Item 2) back on upper fan housing (Figure 36, Item 1).

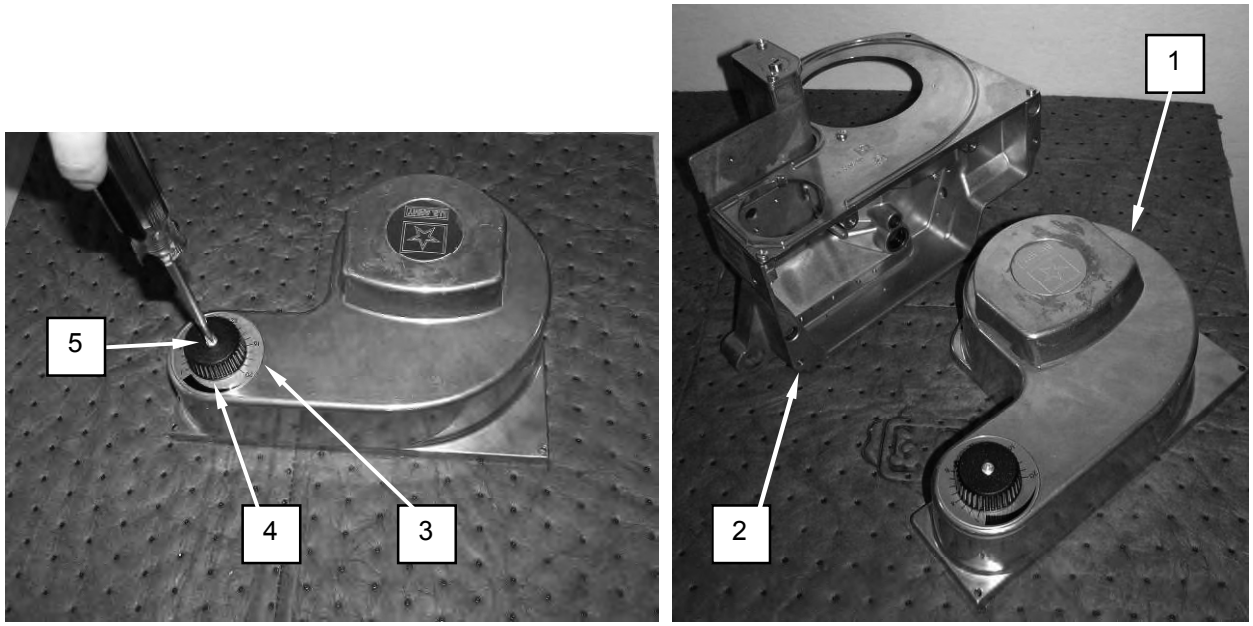


Figure 36. Upper Fan Housing and Blower Control Knob Replacement.

23. Attach upper fan housing to the intermediate motor mounting plate with two short screws (Figure 37, Item 2) and two long screws (Figure 37, Item 1).

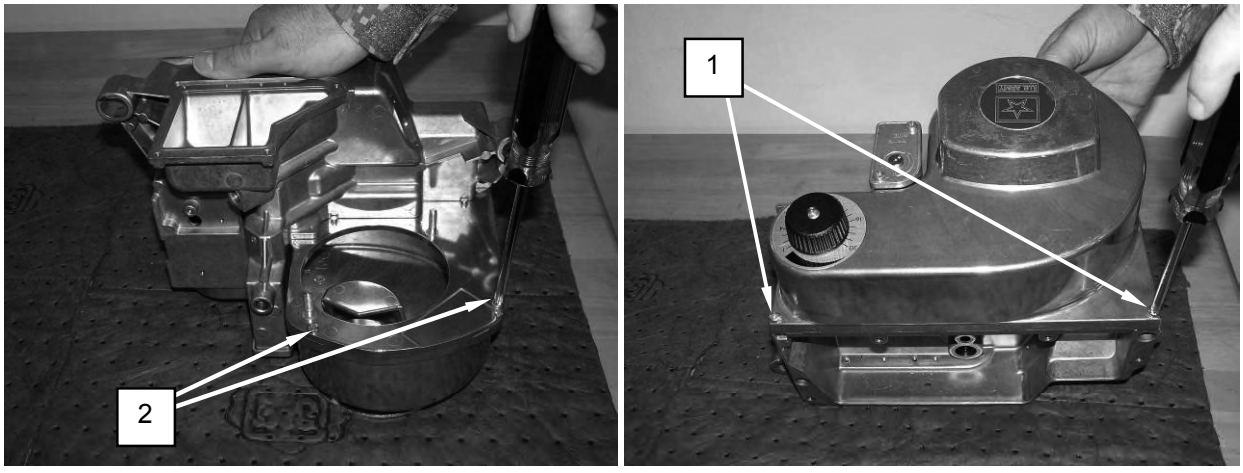


Figure 37. Upper Fan Housing Replacement.

REPAIR – CONTINUED

24. Install power cable (Figure 38, Item 1) and ground wire (Figure 38, Item 8) into lower fan housing. Install the ground wire to the lower fan housing and secure with ground wire retaining screw (Figure 38, Item 9).

25. Install ignition transformer (Figure 38, Item 3) into lower fan housing.

26. Tighten ignition transformer retaining screws (Figure 38, Item 2 and Item 7). Do not over tighten.

27. Reconnect wire spades to the ignition transformer. Connect the yellow/green wire spade connector (Figure 38, Item 6) from the ground wire to the far left small terminal, connect the blue wire spade connector (Figure 38, Item 5) to the center terminal, and the brown wire spade connector (Figure 38, Item 4) to the remaining terminal as shown.

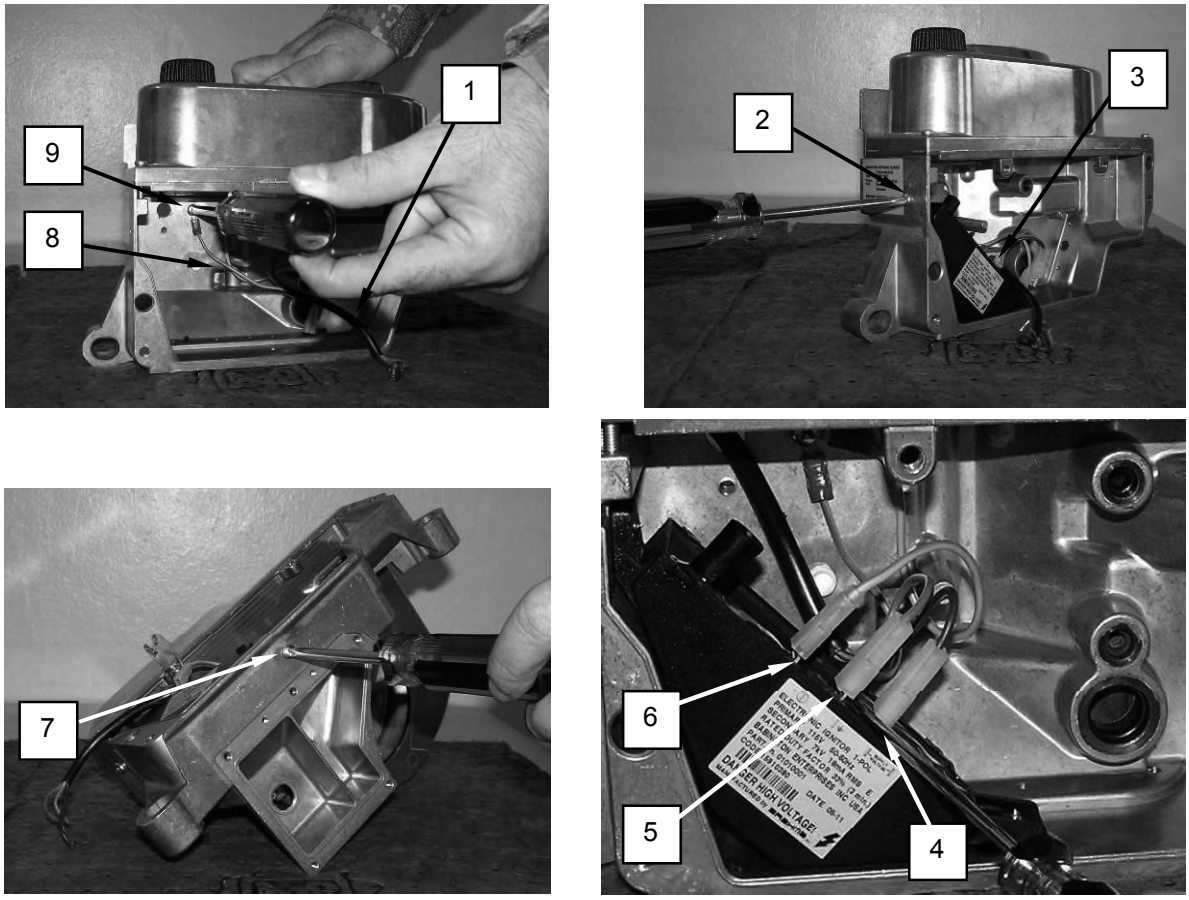


Figure 38. Spade Connection and Transformer Placement.

REPAIR – CONTINUED

28. Install overflow safety device retaining nut (Figure 39, Item 1) and tighten. Do not over tighten.
29. Route wires from overflow safety sensor (Figure 39, Item 4) through retaining nut (Figure 39, Item 1).
30. Install overflow safety sensor (Figure 39, Item 4) by hand tightening.
31. Slide overflow safety float (Figure 39, Item 2) over overflow safety sensor.
32. Install overflow safety float switch retaining clip (Figure 39, Item 3).

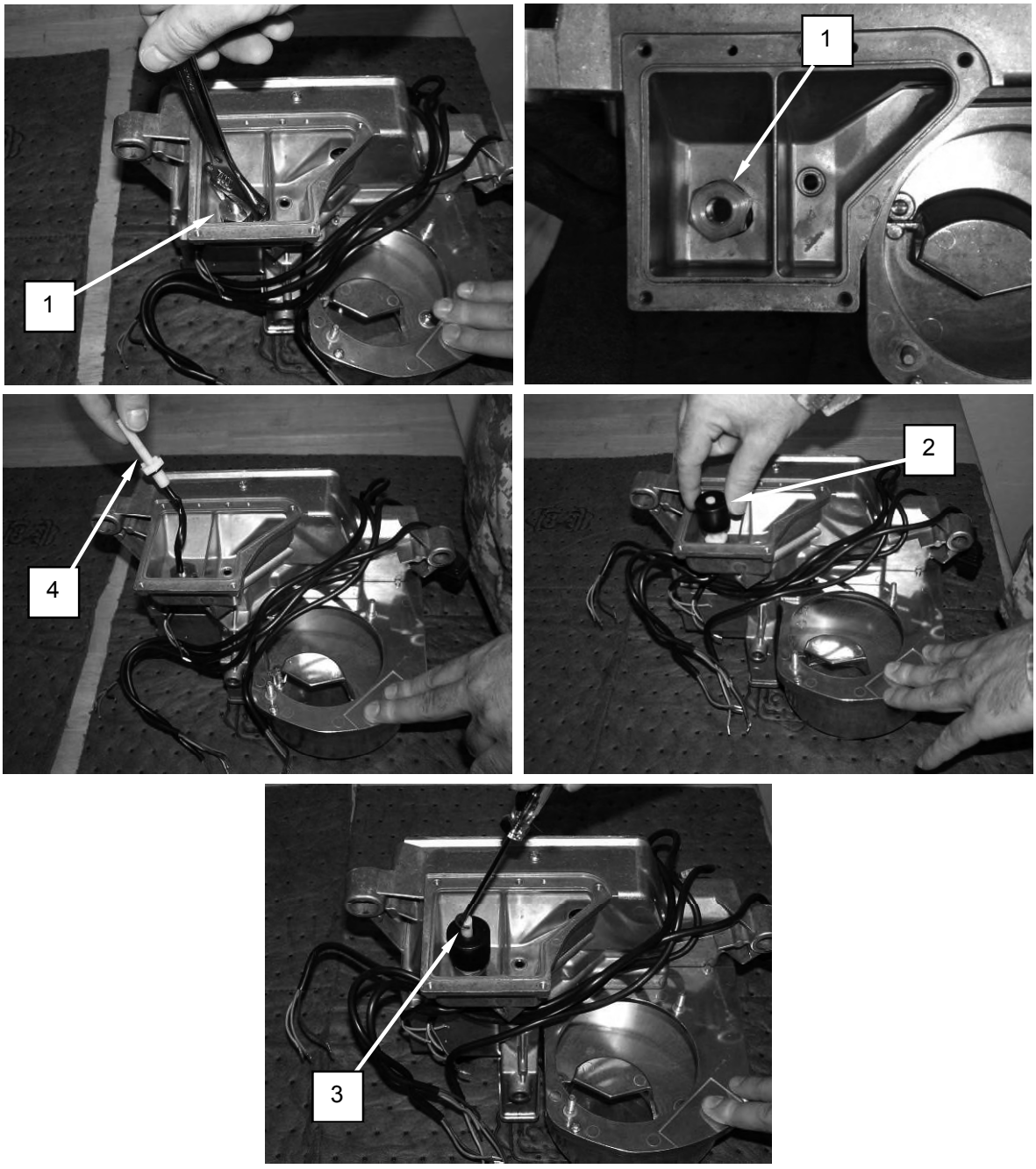


Figure 39. Overflow Safety Device Replacement.

REPAIR – CONTINUED

33. Install control box base (Figure 40, Item 1) and secure with two screws.

NOTE

The excess length of power cable is stowed between the compressor and the housing.

34. Align photocell base (Figure 40, Item 2) with holes in lower fan housing, ensuring that the slotted side faces towards the combustion chamber. Install with two screws.

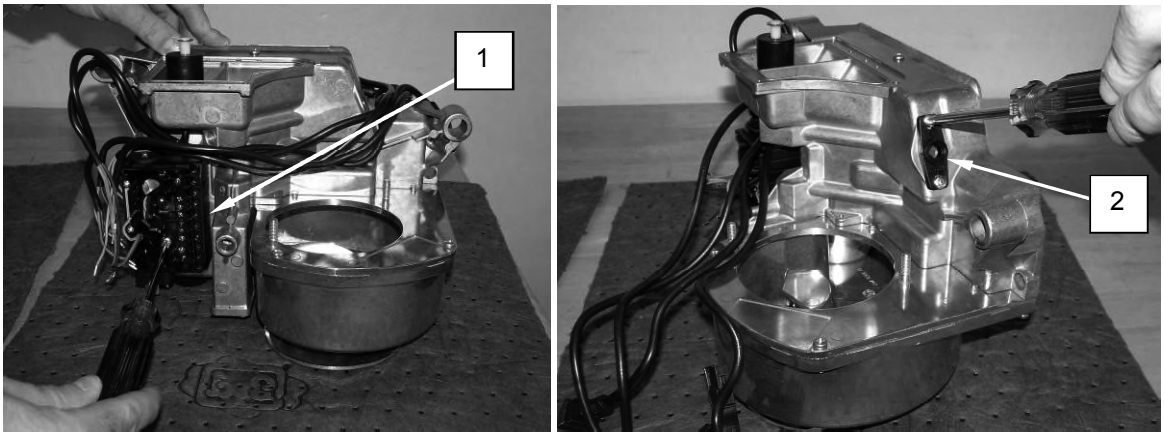


Figure 40. Photocell Base and Control Box Base Replacement.

35. Install the power pack assembly (Figure 41, Item 1), consisting of the motor, compressor, fuel pump, and blower wheel, and secure with two hex nuts and washers (Figure 41, Item 2) which hold the motor mounts to the upper fan housing.

36. Reconnect motor power cord to motor housing.

37. Plug photocell connector (Figure 41, Item 2) to photocell base, aligning the tabs on the photocell base with the tabs on the probe.

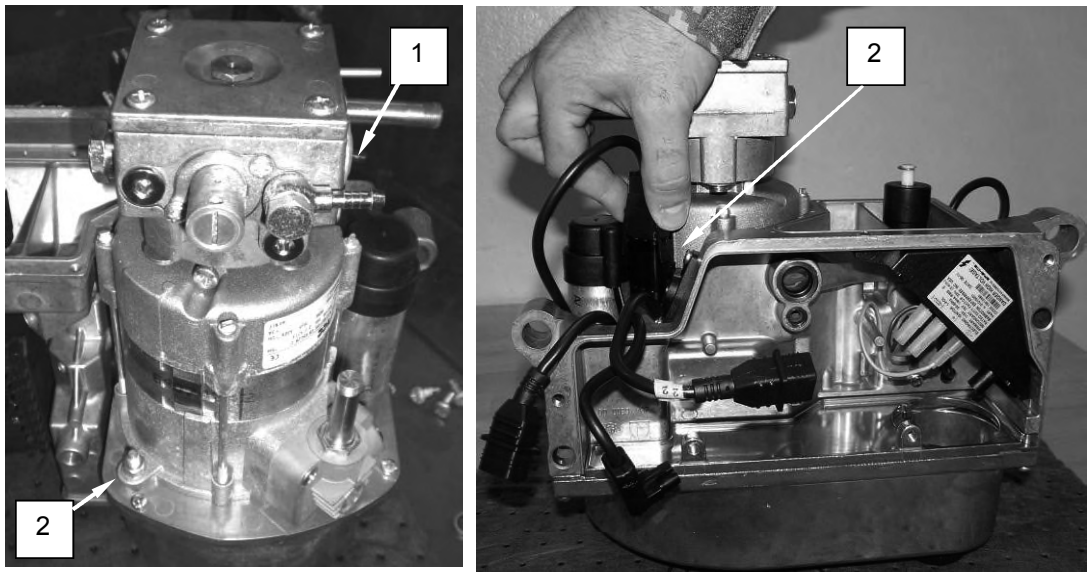


Figure 41. Photocell and Power Pack Replacement.

REPAIR – CONTINUED

NOTE

Power cables should be routed between the power pack assembly and housing.

38. Place all power cables back into the control box access hole in bottom of control box base, routing the wires behind the motor.

NOTE

The use of needle nose pliers to place wires into the terminal block will help ensure proper connection.

39. Connect the two photocell wires (brown and blue) to upper terminals (No.1 and No.2) respectively. Refer to Figure 42.

40. Connect all the ground (green/yellow) wires from main power, motor, air solenoid, and fuel solenoid to the three lower ground terminals. Refer to Figure 42.

41. Connect all the neutral (blue) wires from the main power, motor, air solenoid, fuel solenoid, and ignition transformer to the No. 8 terminals. Refer to Figure 42.

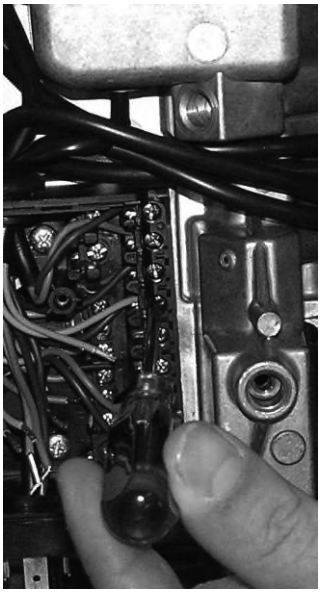
42. Connect either wire on float switch and the brown wire of fuel solenoid to lower terminal A. Refer to Figure 42.

43. Connect the brown ignition transformer wire to upper terminal No. 3. Refer to Figure 42.

44. Connect the brown motor wire and the remaining float-switch wire to upper terminal No. 4. Refer to Figure 42.

45. Connect the air solenoid brown wire to upper terminal No. 5. Refer to Figure 42.

46. Connect the main power brown wire to upper terminal No. 9. Refer to Figure 42.



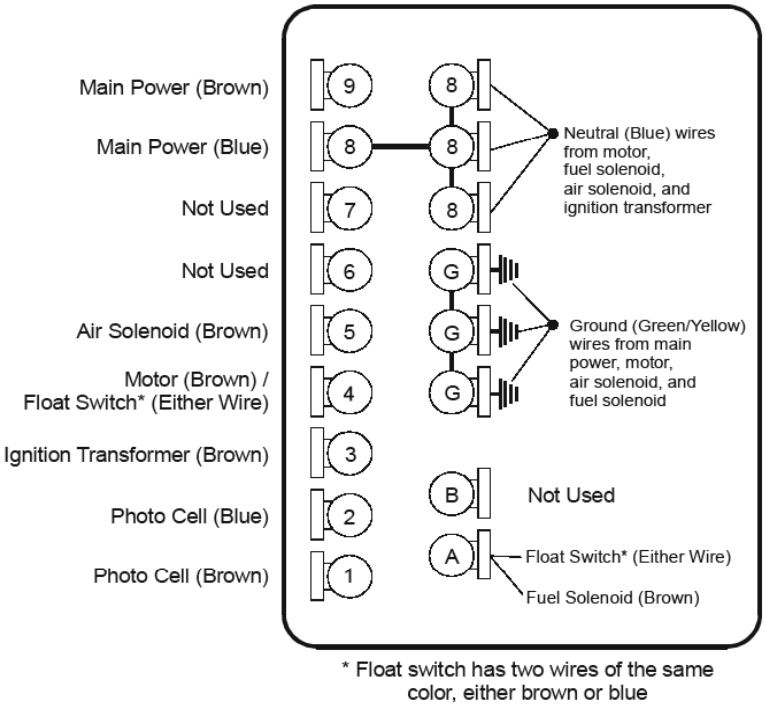


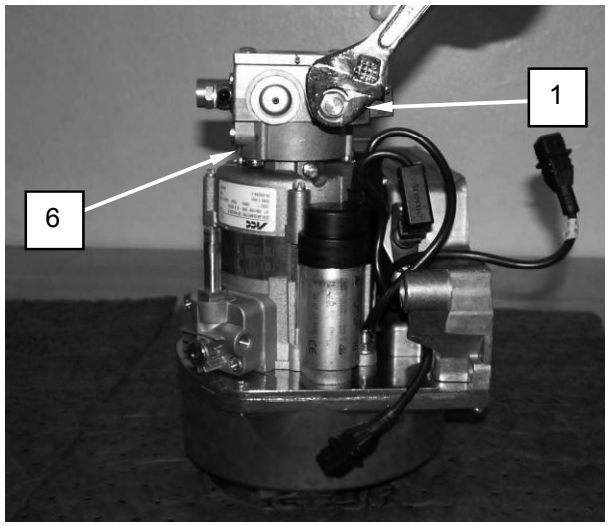
Figure 42. Burner Wiring Diagram.

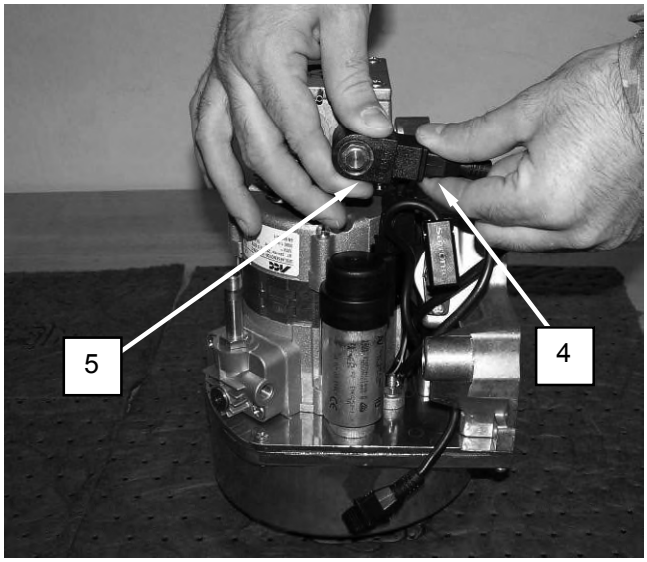
REPAIR – CONTINUED

47. Place fuel solenoid post (Figure 43, Item 1) on fuel pump (Figure 43, Item 6) and secure with the retaining nut. Do not over tighten.

48. Reconnect fuel solenoid coil (Figure 43, Item 5) and fuel solenoid power cable (Figure 43, Item 4).

49. Install the fuel sump (Figure 43, Item 3) and crossover tube (Figure 43, Item 2). While gently twisting the tube, slowly slide the sump horizontally toward the pump to engage the fuel crossover tube to the sump pump taking care not to damage overflow safety device.





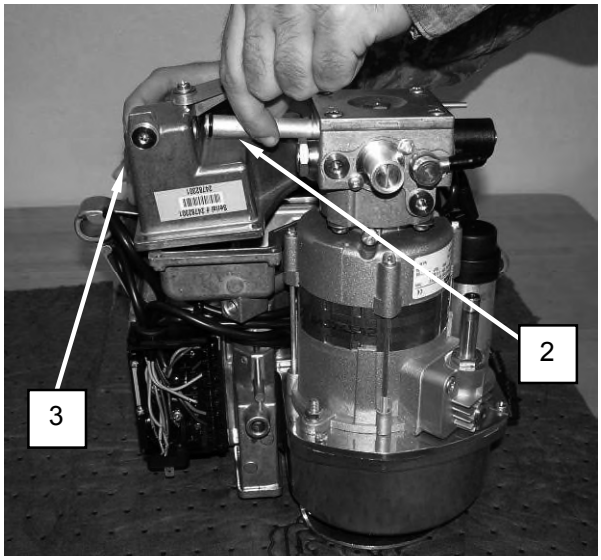


Figure 43. Fuel Sump and Fuel Solenoid Power Cable.

REPAIR – CONTINUED

50. Check the fuel sump gasket to ensure it is flexible and not torn. Install the screws that hold the fuel sump to the lower fan housing and tighten, alternating screws to ensure uniform seal (Figure 44, Item 2 and Item 1).

51. Install the metal fuel line (Figure 44, Item 4) and tighten both metal fuel line hex nut connections by hand first, then with a wrench, being careful not to cross thread the connections.

52. Install the metal air line (Figure 44, Item 3) and tighten both air line hex nut connections by hand.

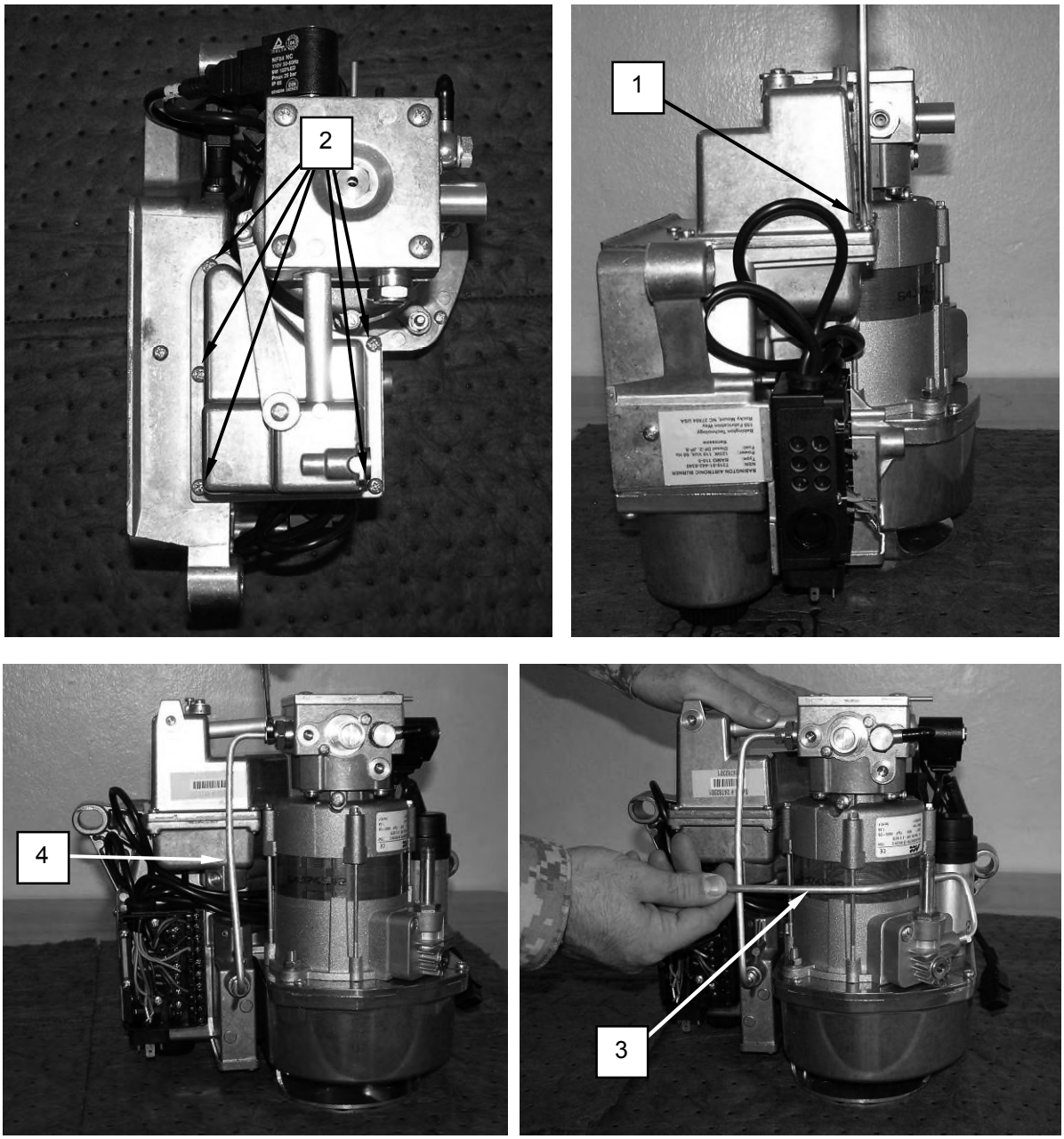


Figure 44. Air Line and Fuel Line Replacement.

REPAIR – CONTINUED

53. Use a wrench to tighten the metal air line connections (Figure 45, Item 1), being careful not to cross thread the connections. Do not over tighten.

54. Plug air solenoid coil (Figure 45, Item 2) into power cable (Figure 45, Item 3).

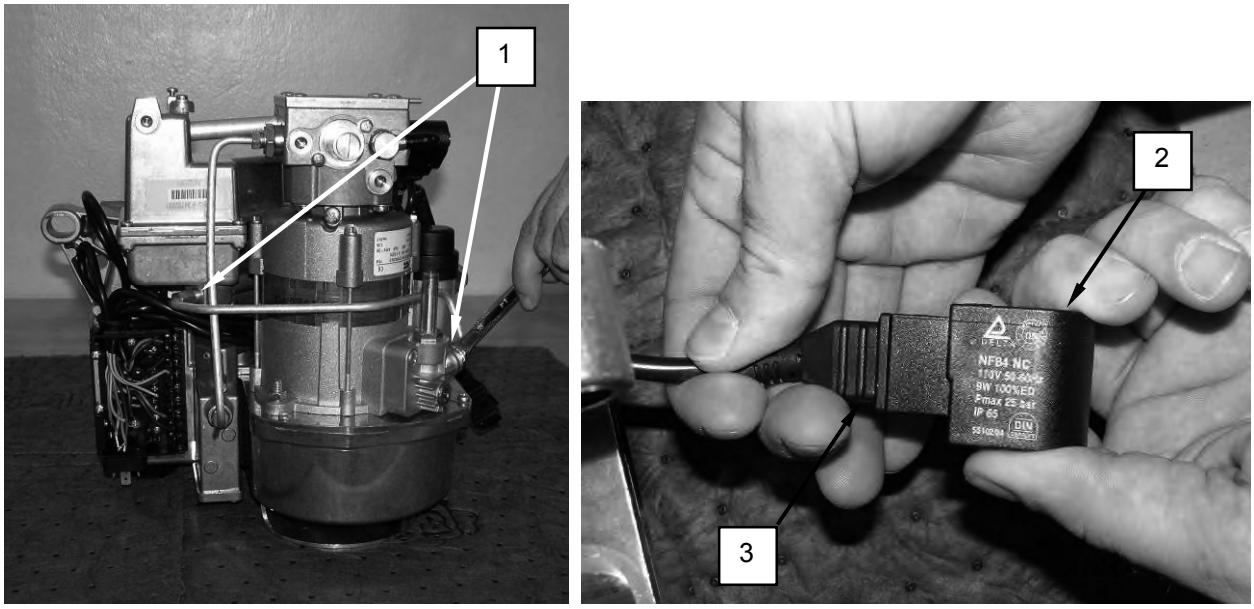


Figure 45. Air Solenoid Coil and Air Line Replacement.

55. Install air solenoid coil (Figure 46, Item 1) onto valve body, and install washers over air solenoid coil (Figure 46, Item 2).

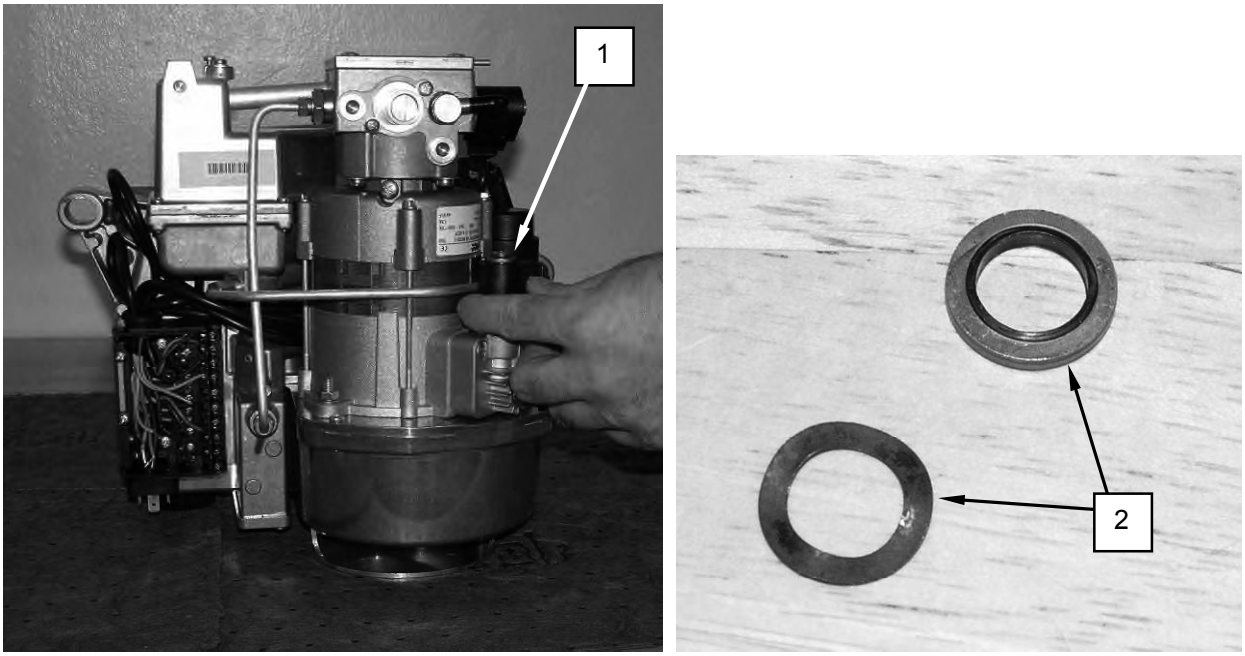


Figure 46. Air Solenoid Coil and Air Solenoid Replacement.

REPAIR – CONTINUED

56. Install primer port coupling (Figure 47, Item 1) onto the base of the air solenoid and finger tighten.

57. Reconnect primer port tubing to the base of the fuel pump (Figure 47, Item 2).

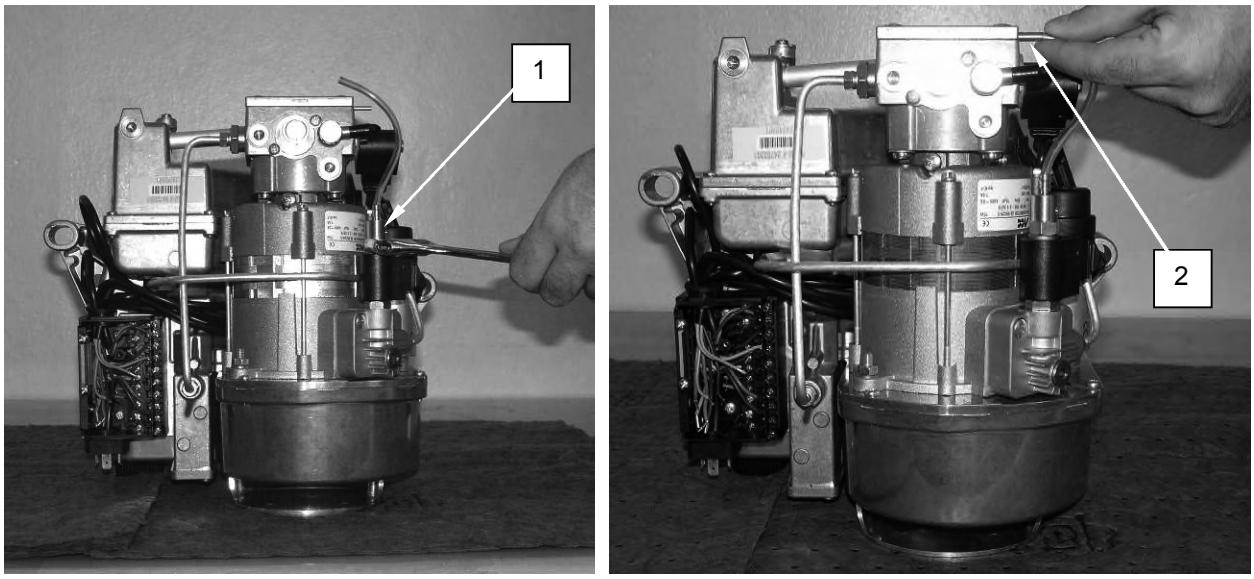


Figure 47. Primer Port Tubing and Primer Port "T" Replacement.

58. Reconnect the igniter cable spade connector from the atomizing chamber to the ignition transformer (Figure 48, Item 1). Removal and installation of the atomizing chamber does not require tools. Install the atomizing chamber (Figure 48, Item 2) by inserting the tubing into the appropriate slots by hand.

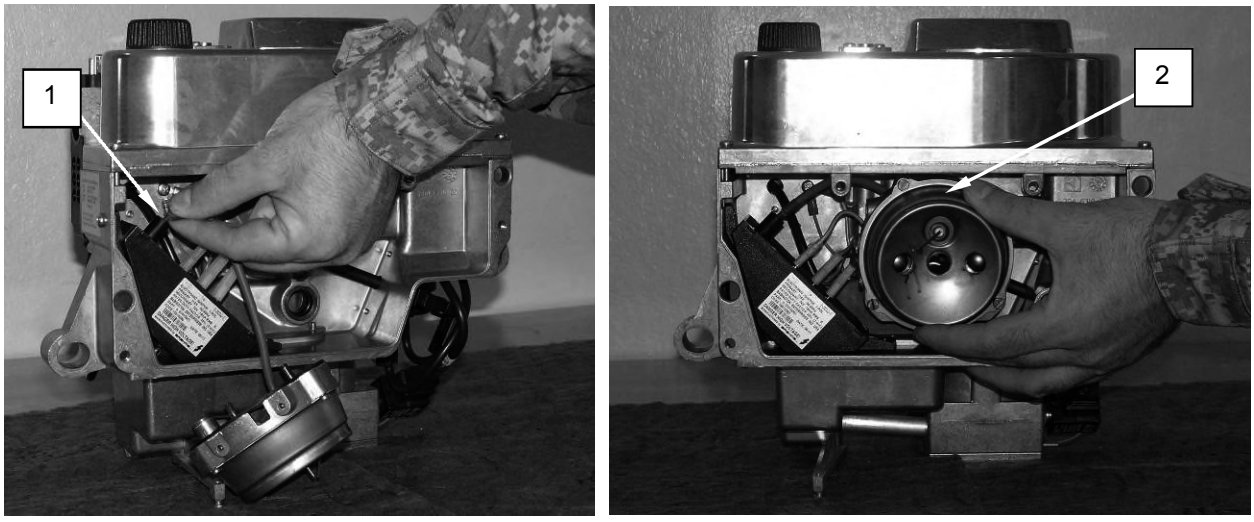


Figure 48. Atomizing Chamber Replacement.

REPAIR – CONTINUED

CAUTION

Stand the TRH burner unit on the fuel pump side to prevent damage to the metal fuel line. Failure to do so could cause damage to the equipment.

59. Install the front flange (Figure 49, Item 1) of the lower fan housing by replacing and tighten the four flange retaining screws (Figure 49, Item 4) to cover the atomizing chamber (Figure 49, Item 3). If the air tube/flame tube assembly (Figure 49, Item 2) was removed, install it prior to placing front flange back on the lower housing.

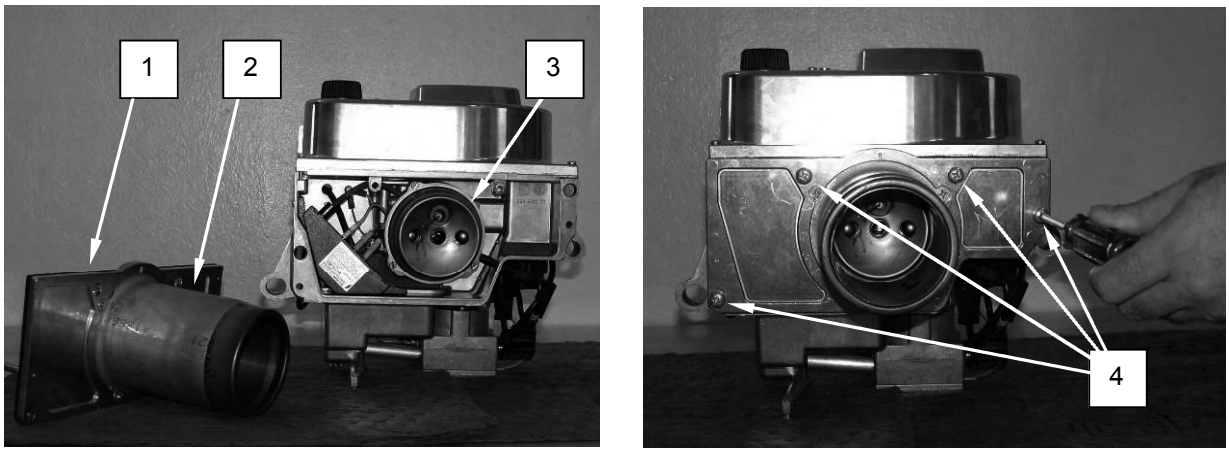


Figure 49. Lower Fan Housing Flange Replacement.

60. Install the control box and tighten the retaining screw (Figure 50, item 1). Do not over tighten.

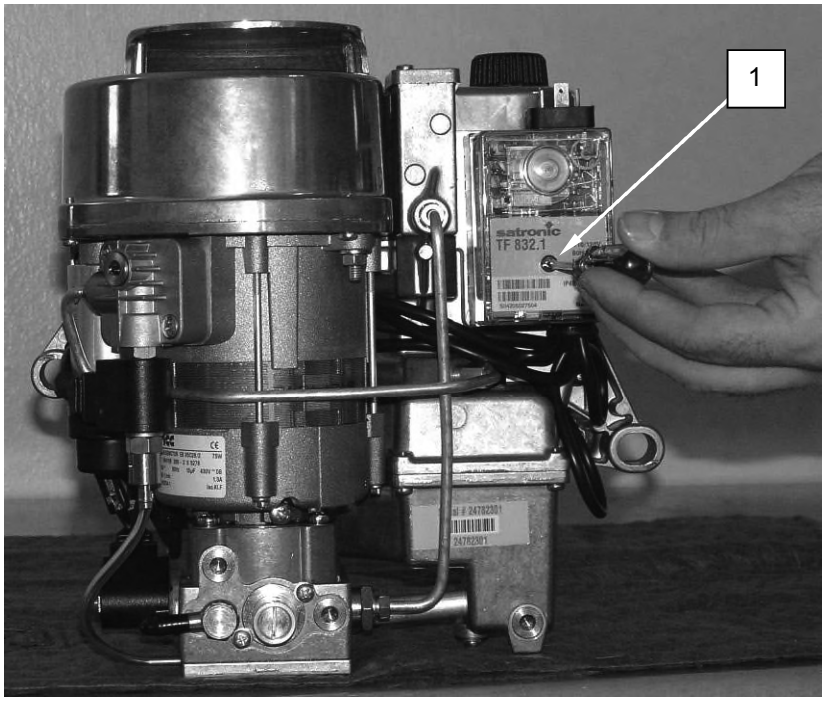


Figure 50. TRH Burner Control Box Replacement.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

FUEL PUMP
REPAIR, REPLACE

INITIAL SETUP:

Tools and Special Tools

Tool Kit, GMTK (WP 0069, Item 4)

Personnel Required

Quartermaster Equipment Repairer 91J (1)

Materials/Parts

Chemical and Oil Protective Gloves, (WP 0069, Item 9)
Industrial Goggles (WP 0069, Item 10)
Oil and Water Absorbent Material (WP 0069, Item 1)

Equipment Condition

TRH Burner removed from TRH (WP 0026)

REPAIR

Fuel Pump Membrane Replacement

WARNING

Do not attempt service procedures on a TRH burner that has recently been in operation. Let the burner cool down before performing these procedures. Failure to observe safety precautions may result in severe personal injury.

1. Remove four retaining screws (Figure 1, Item 1) from fuel pump cover (Figure 1, Item 2).

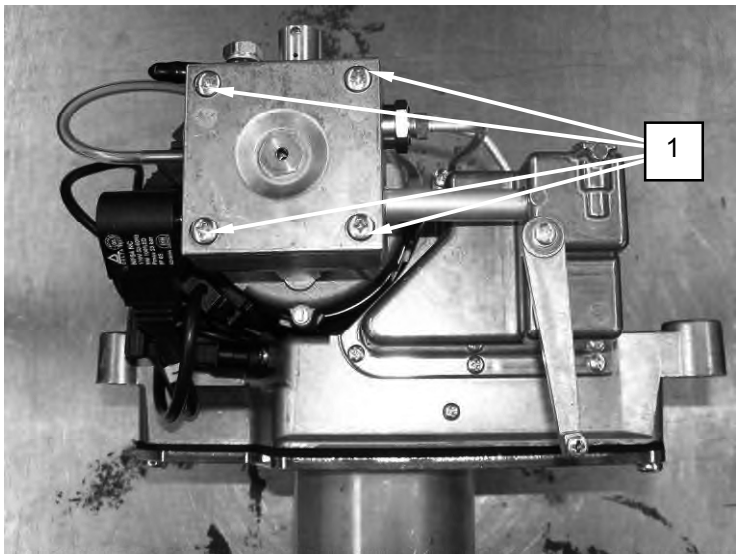


Figure 1. Fuel Pump Retaining Screws.

REPAIR - CONTINUED

WARNING

Be mindful of residual fuel when performing service on a TRH Burner. Fuel can be absorbed in the skin or clothing and present a combustion hazard. Be sure to use absorbent material to clean up any excess fuel. Wear protective clothing when servicing a TRH Burner. Wash hands and clothes thoroughly after service. Failure to observe these warnings may result in injury to personnel.

2. Remove pump membrane (Figure 2, Item 1) from fuel pump being careful not to misplace small spring (Figure 2, Item 2).

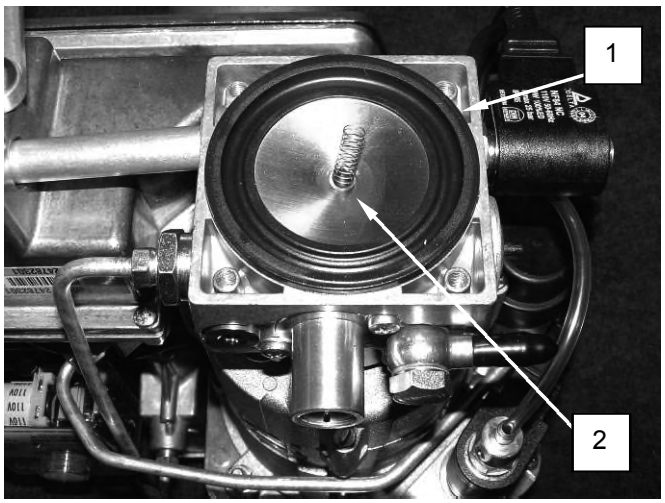


Figure 2. Fuel Pump Membrane and Spring.

3. Remove metal disk (Figure 3, Item 1) from pump membrane (Figure 3, Item 2), and dispose of disk IAW Unit SOP if damaged.

4. Place metal disk in replacement pump membrane by stretching membrane over disk.

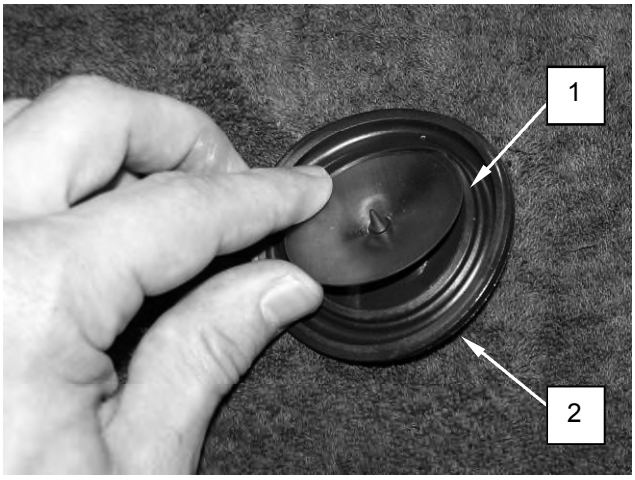


Figure 3. Fuel Pump Membrane and Disk.

REPAIR – CONTINUED

5. Install replacement fuel pump membrane (Figure 4, Item 1) and spring (Figure 4, Item 2) in fuel pump housing.

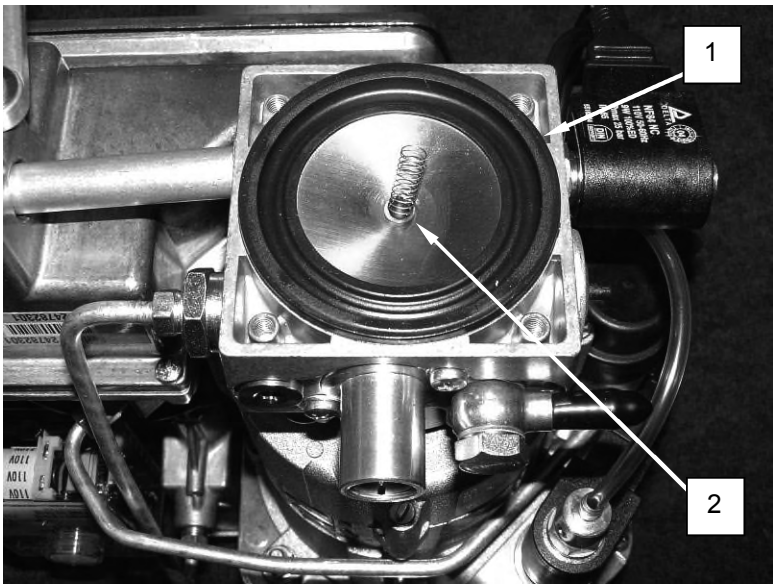


Figure 4. Fuel Pump Membrane and Spring.

6. Install fuel pump cover (Figure 5, Item 1) and retaining screws (Figure 5, Item 2).

7. Tighten retaining screws.

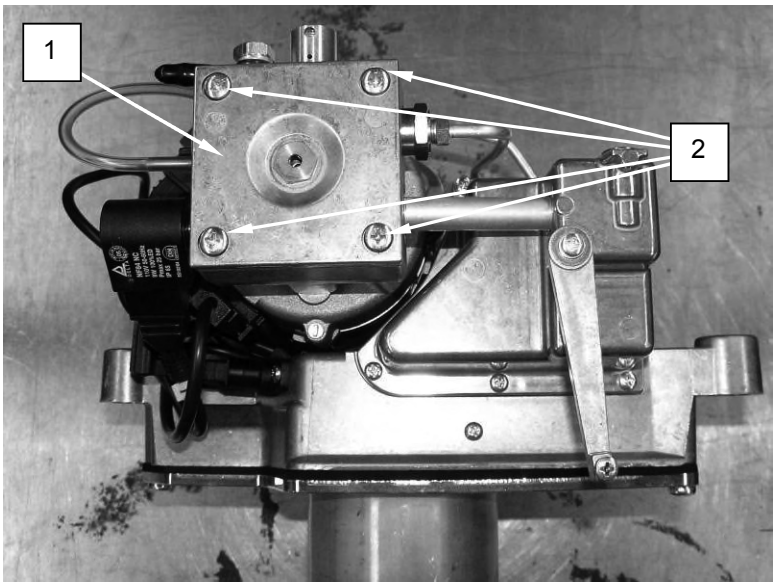


Figure 5. Fuel Pump Cover.

END OF TASK

REPLACE

1. Remove five fuel sump retaining screws (Figure 6, Item 1 and Item 2).

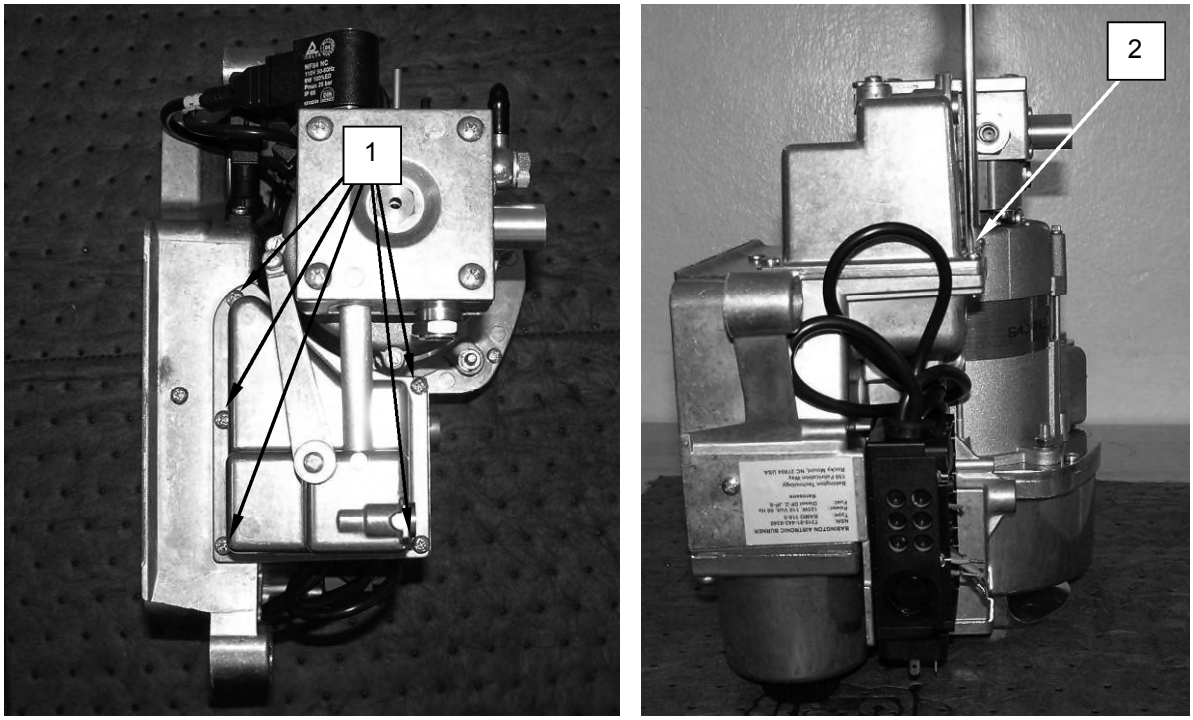


Figure 6. Removing the Fuel Sump.

2. While gently rotating connector tube, slowly slide sump (Figure 7, Item 1) horizontally away from the pump to disengage the fuel crossover tube (Figure 7, Item 5) from the fuel pump (Figure 7, Item 2), taking care not to damage the overflow safety device. Remove the fuel sump (Figure 7, Item 1) and crossover tube (Figure 7, Item 5).

3. Remove fuel solenoid coil retaining nut and washer (Figure 7, Item 3), and fuel solenoid coil (Figure 7, Item 4) from pump.

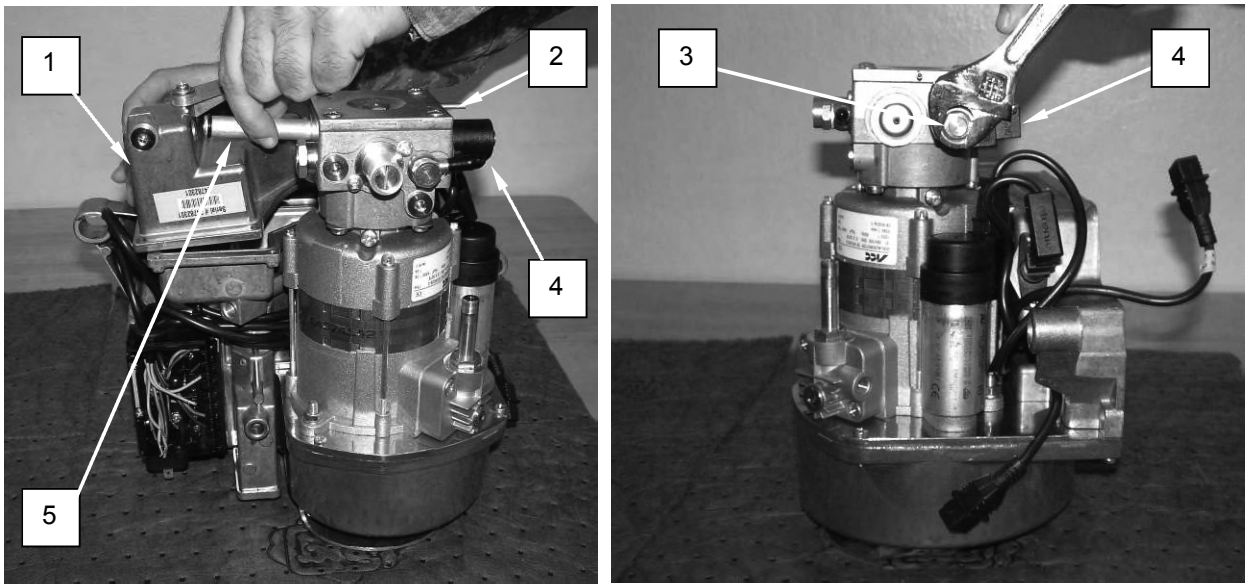


Figure 7. Crossover Tube, Sump, and Solenoid Removal.

REPLACE - CONTINUED

4. Remove primer port tube (Figure 8, Item 1).

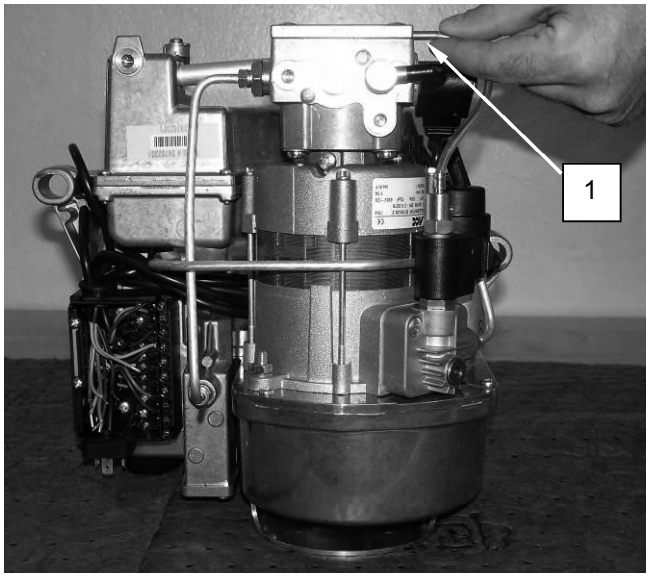


Figure 8. Primer Port Tubing Removal.

5. Detach metal tube assembly from fuel pump by loosening retaining nut (Figure 9, Item 1) on fuel pump.

Figure 9. Metal Tube Assembly Removal.

REPLACE - CONTINUED

6. Loosen two retaining screws that secure the pump assembly (Figure 10, Item 1).

7. Lift out pump assembly (Figure 10, Item 2).

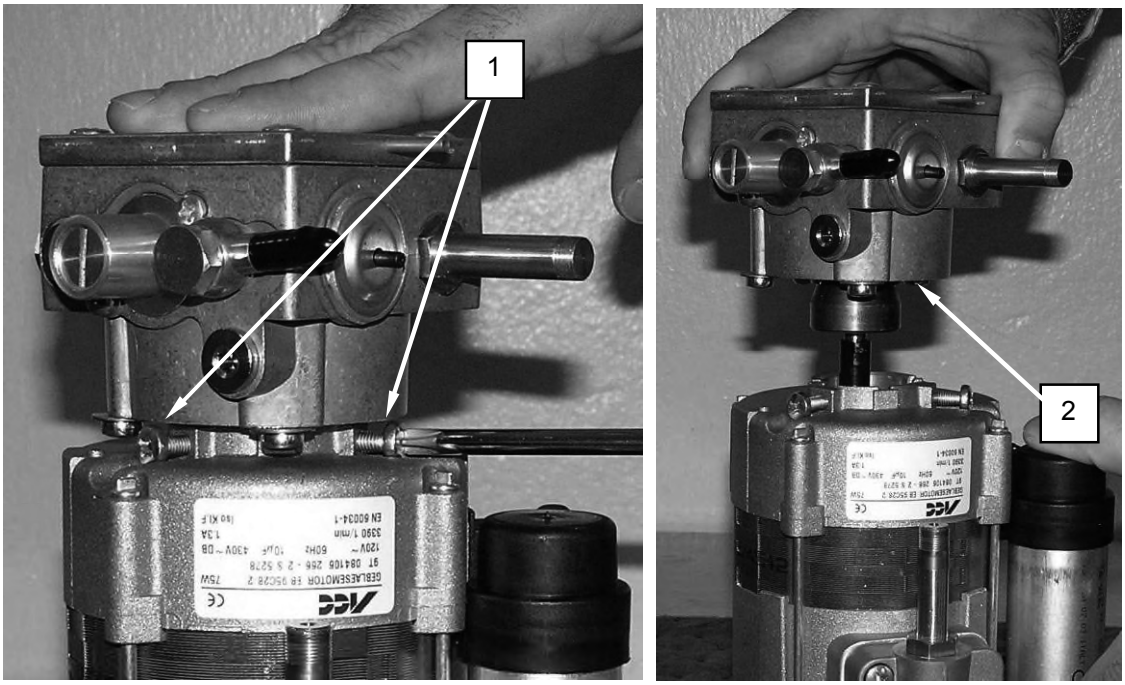


Figure 10. Fuel Pump Assembly Removal.

8. Replace fuel pump with serviceable item from stock. Ensure coupling (Figure 11, Item 1) is present on replacement pump.

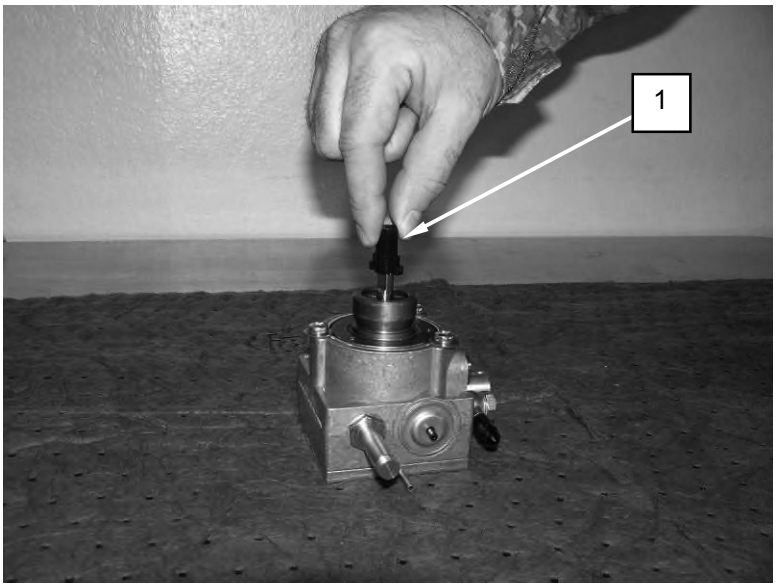


Figure 11. Fuel Pump Coupling.

REPLACE - CONTINUED

9. Install fuel pump assembly (Figure 12, Item 2). Orient so fuel primer port (Figure 12, Item 1) is aligned with fuel line.

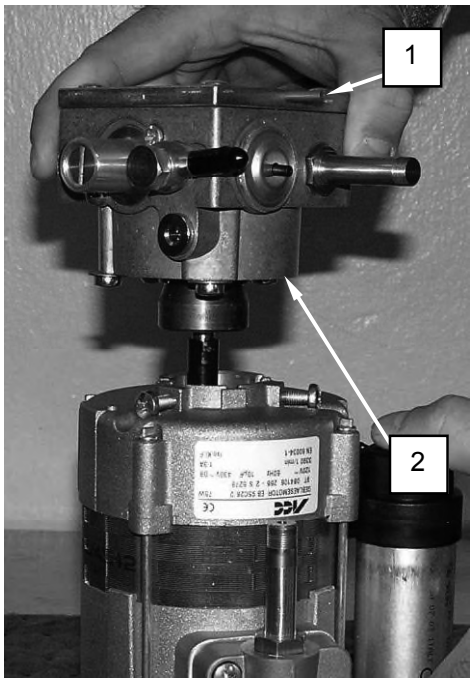


Figure 12. Fuel Pump Assembly Removal.

10. Install metal tube assembly and tighten retaining nut (Figure 13, Item 1).

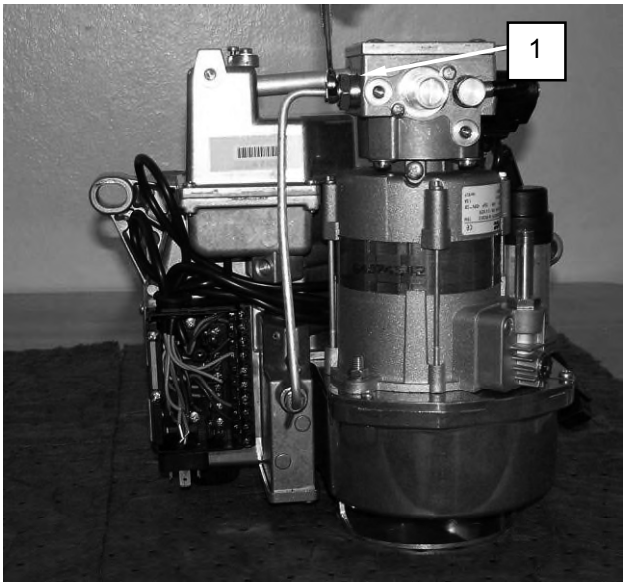


Figure 13. Metal Tube Assembly Removal.

REPLACE - CONTINUED

11. Install the fuel sump (Figure 14, Item 5) and crossover tube (Figure 14, Item 3). While gently twisting the crossover tube, slowly slide the sump horizontally toward the pump (Figure 14, Item 1) to engage the fuel crossover tube to the sump pump taking care not to damage overflow safety device.

12. Tighten five fuel sump retaining screws (Figure 14, Item 1 and Item 3).

13. Place fuel solenoid coil (Figure 14, Item 2) on fuel pump and secure by both replacing and tightening the retaining nut (Figure 14, Item 4).

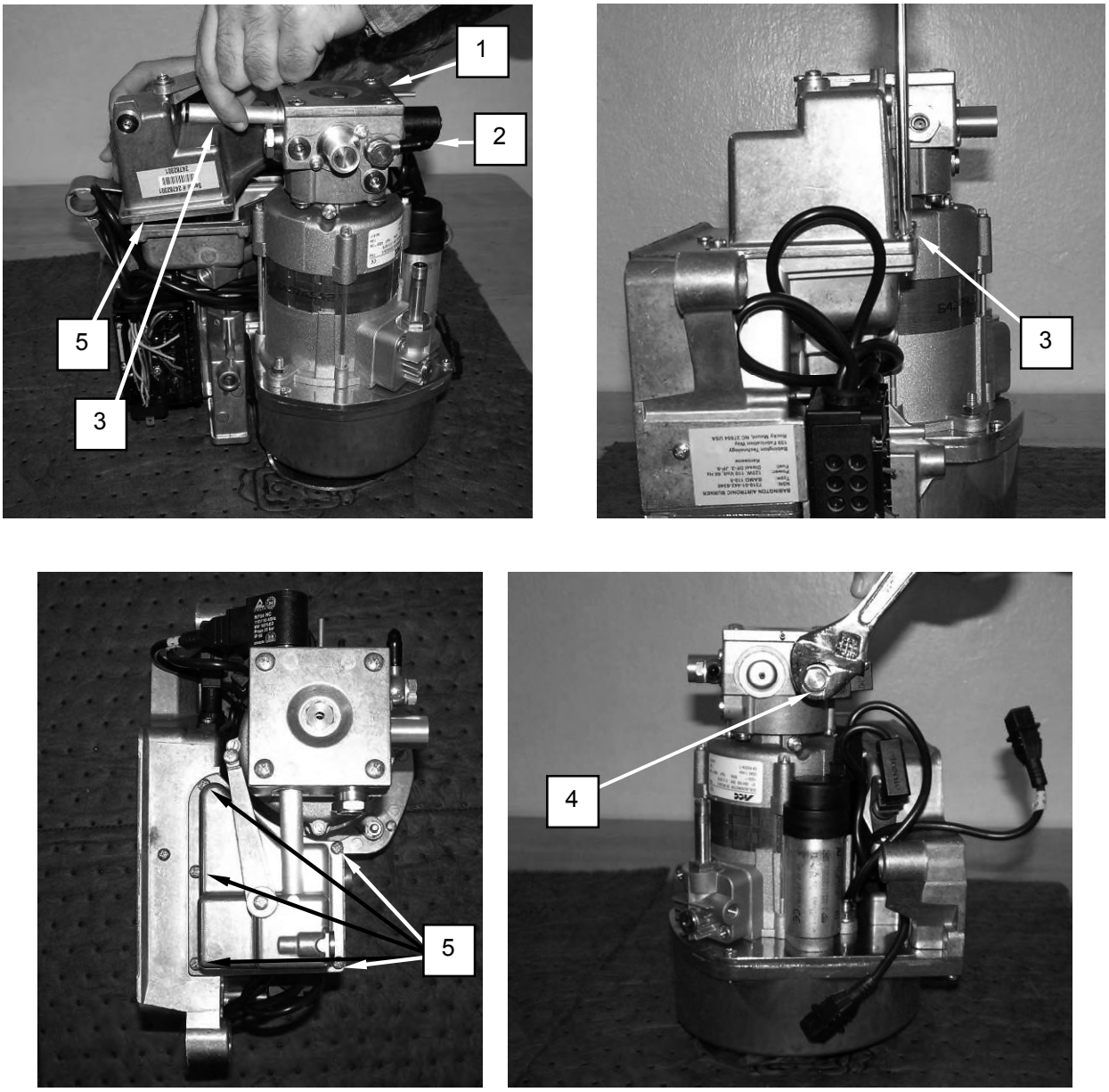


Figure 14. Crossover Tube, Sump, and Solenoid Replacement.

REPLACE - CONTINUED

14. Install primer port tubing (Figure 15, Item 1).

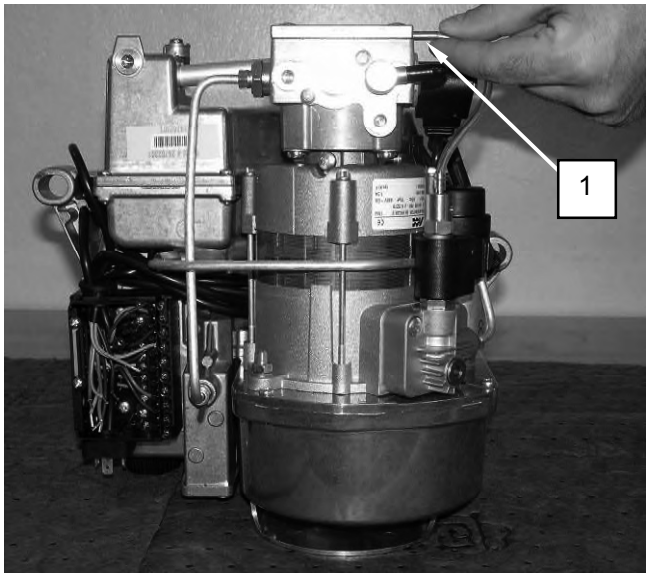


Figure 15. Primer Port Tube Replacement.

NOTE

Ensure that the crossover tube is properly aligned prior to tightening screws.

15. Tighten fuel pump assembly retaining screws (Figure 16, Item 1).

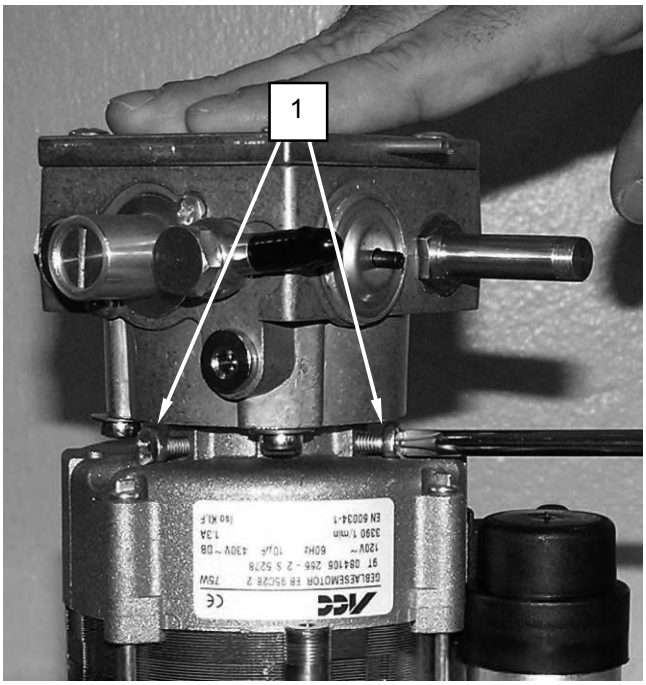


Figure 16. Tighten Fuel Pump Assembly Retaining Screws.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

ATOMIZING CHAMBER
REPAIR, REPLACE

INITIAL SETUP:

Tools and Special Tools

Tool Kit, GMTK (WP 0069, Item 4)

Personnel Required

Quartermaster Equipment Repairer 91J (1)

Materials/Parts

Chemical and Oil Protective Gloves
(WP 0069, Item 9)
Industrial Goggles (WP 0069, Item 10)
Oil and Water Absorbent Material
(WP 0069, Item 1)

Equipment Condition

TRH Burner removed from TRH (WP 0026)

REPAIR

Repair of the atomizing chamber will consist of replacing the Igniter.

1. Remove the front flange of the lower fan housing by removing the four screws (Figure 1, Item 4) to expose the atomizing chamber (Figure 1, Item 3). It is not necessary to remove the air tube/flame tube assembly (Figure 1, Item 2) from the front flange (Figure 1, Item 1).

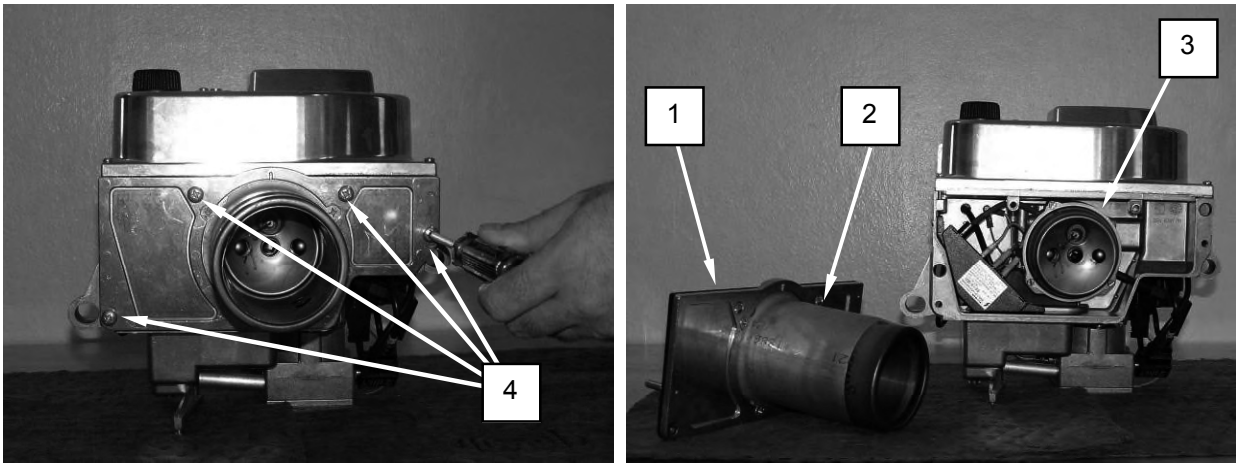


Figure 1. Lower Fan Housing Flange Removal.

REPAIR – CONTINUED

2. Remove the atomizing chamber by pulling directly out (Figure 2, Item 2). Once removed, pull the igniter cable spade connector from the ignition transformer (Figure 2, Item 1).

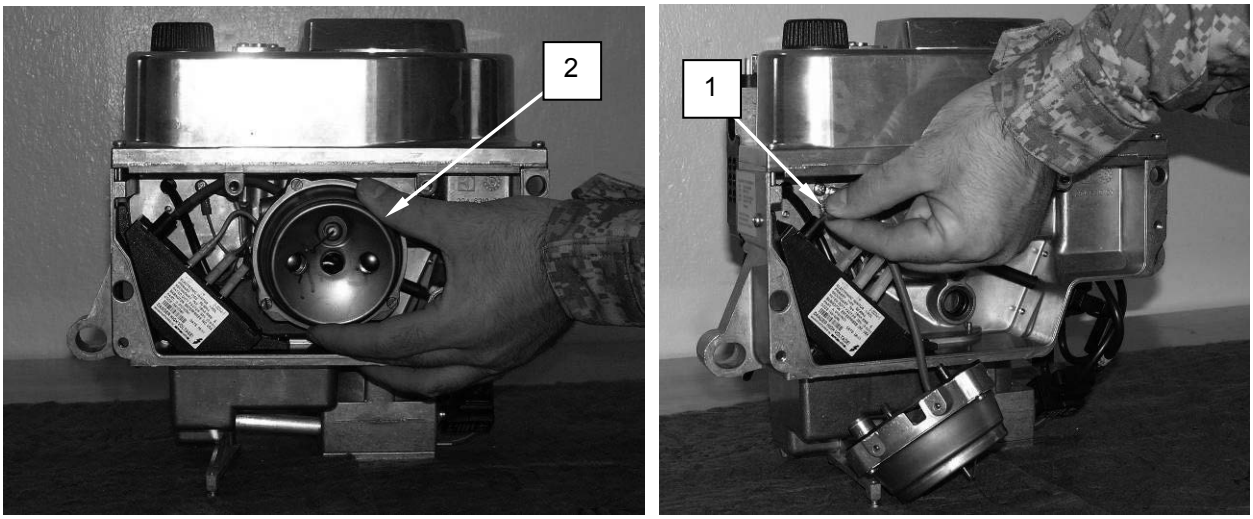


Figure 2. Atomizing Chamber Removal.

3. Loosen the igniter retaining screw to remove and replace the igniter (Figure 3, Item 2).

4. Slide the igniter (Figure 3, Item 1) out of the front of the atomizing chamber and replace the new igniter back through the front of the atomizing chamber.

5. Align the tip of the igniter (within 1/8-inch plus/minus 1/32-inch) to the igniter post and lightly tighten the igniter retaining screw (Figure 3, Item 2). The 1/8-inch flat tip screwdriver from the maintenance kit can be used for measurement of the gap.

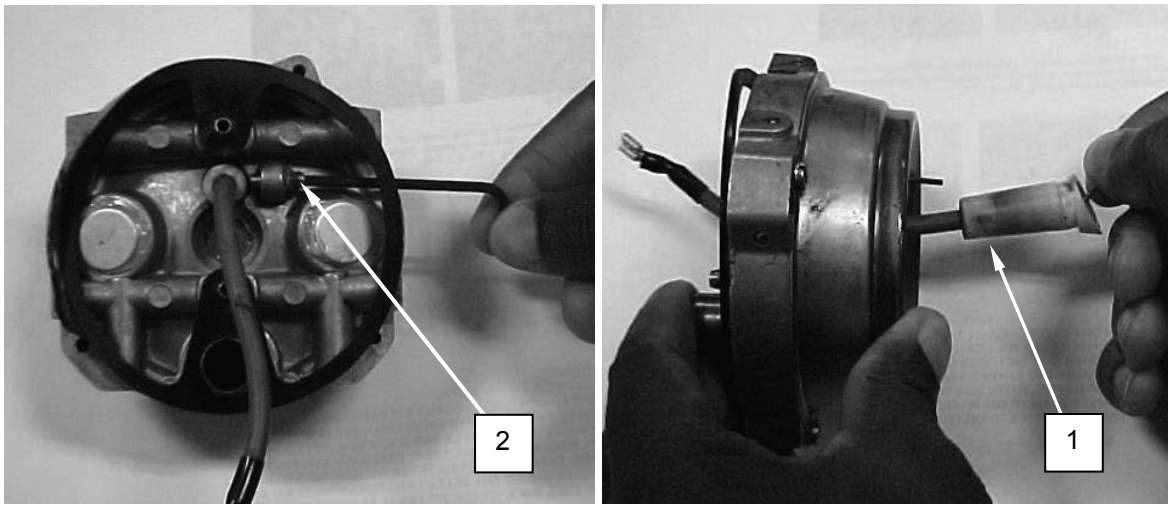


Figure 3. Igniter Replacement.

REPAIR – CONTINUED

6. Reconnect the igniter cable spade connector from the atomizing chamber to the ignition transformer (Figure 4, Item 1). Installation of the atomizing chamber does not require tools. Replace the atomizing chamber (Figure 4, Item 2) by inserting the tubing into the appropriate slots by hand.

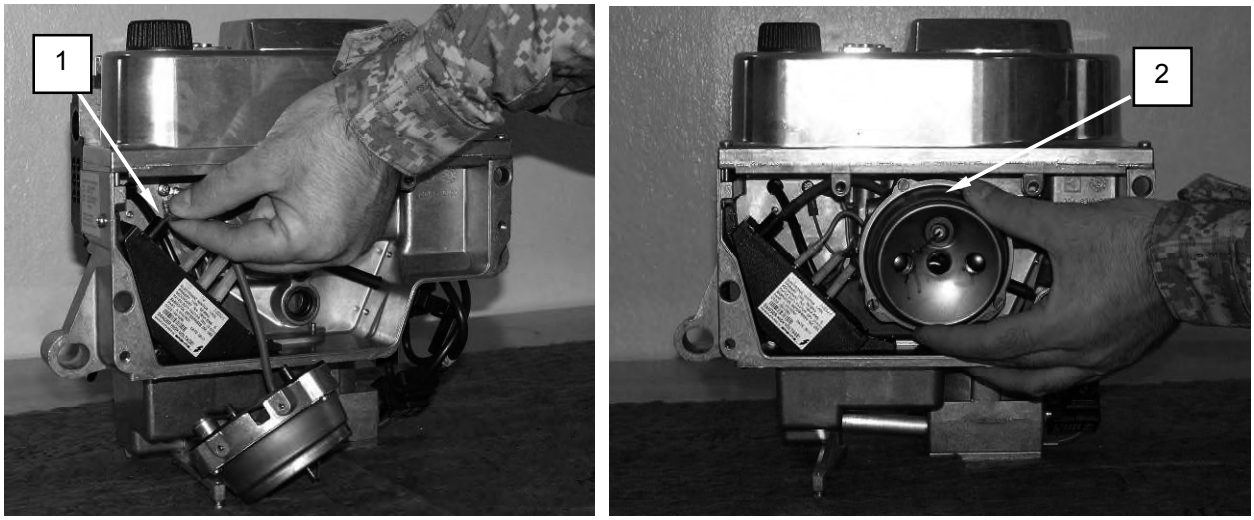


Figure 4. Atomizing Chamber Replacement.

7. Install the front flange of the lower fan housing (Figure 5, Item 1) to cover the atomizing chamber (Figure 5, Item 3). Secure by replacing and tightening the four flange retaining screws (Figure 5, Item 4). If the air tube/flame tube assembly (Figure 5, Item 2) was removed, replace it prior to placing front flange back on the lower housing.

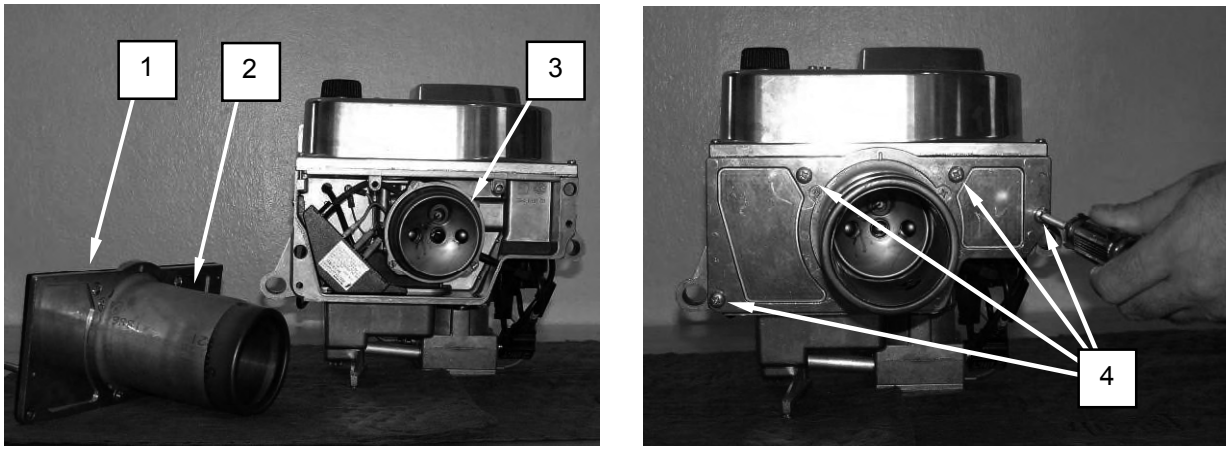


Figure 5. Lower Fan Housing Flange Replacement.

END OF TASK

REPLACE

1. Remove the front flange of the lower fan housing by removing the four screws (Figure 6, Item 4) to expose the atomizing chamber (Figure 6, Item 3). It is not necessary to remove the air tube/flame tube assembly (Figure 6, Item 2) from the front flange (Figure 6, Item 1).

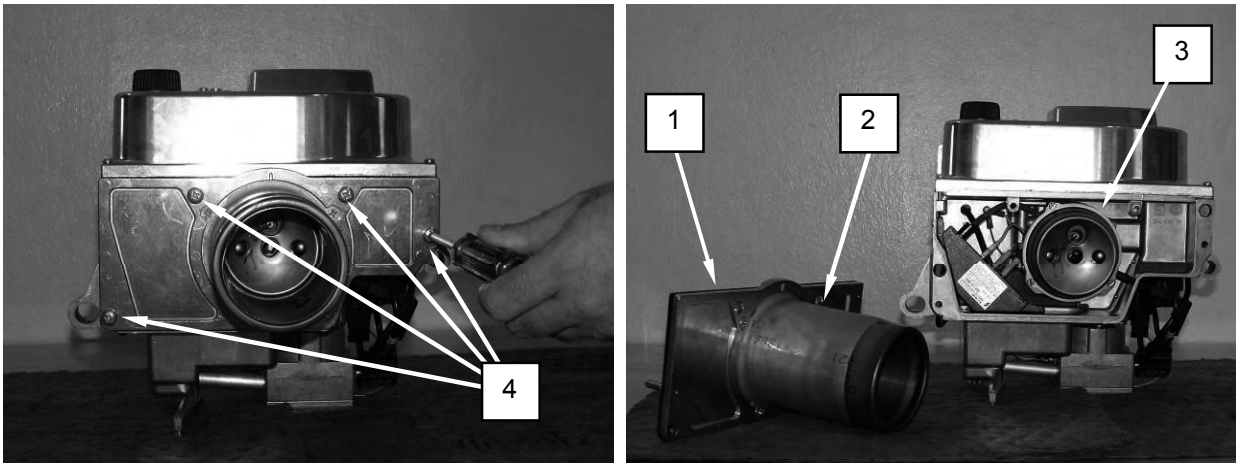


Figure 6. Lower Fan Housing Flange Removal.

2. Remove the atomizing chamber by pulling directly out (Figure 7, Item 2). Once removed, pull the igniter cable spade connector from the ignition transformer (Figure 7, Item 1).

3. Replace atomizing chamber with serviceable part from stock.

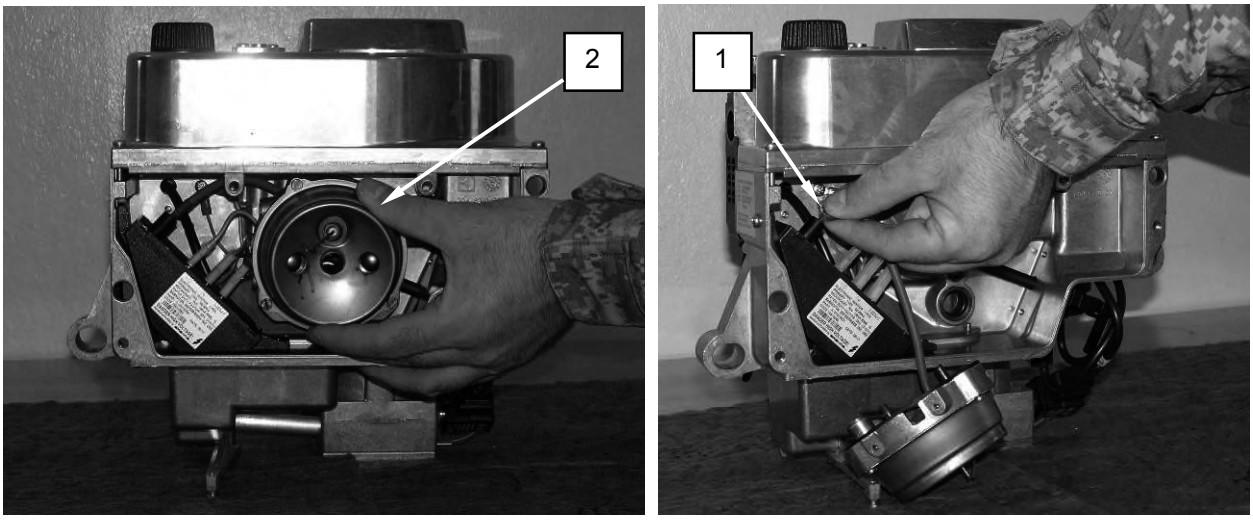


Figure 7. Atomizing Chamber Removal.

REPLACE - CONTINUED

4. Reconnect the igniter cable spade connector from the atomizing chamber to the ignition transformer (Figure 8, Item 1). Replace the atomizing chamber (Figure 8, Item 2) by inserting the tubing into the appropriate slots by hand.

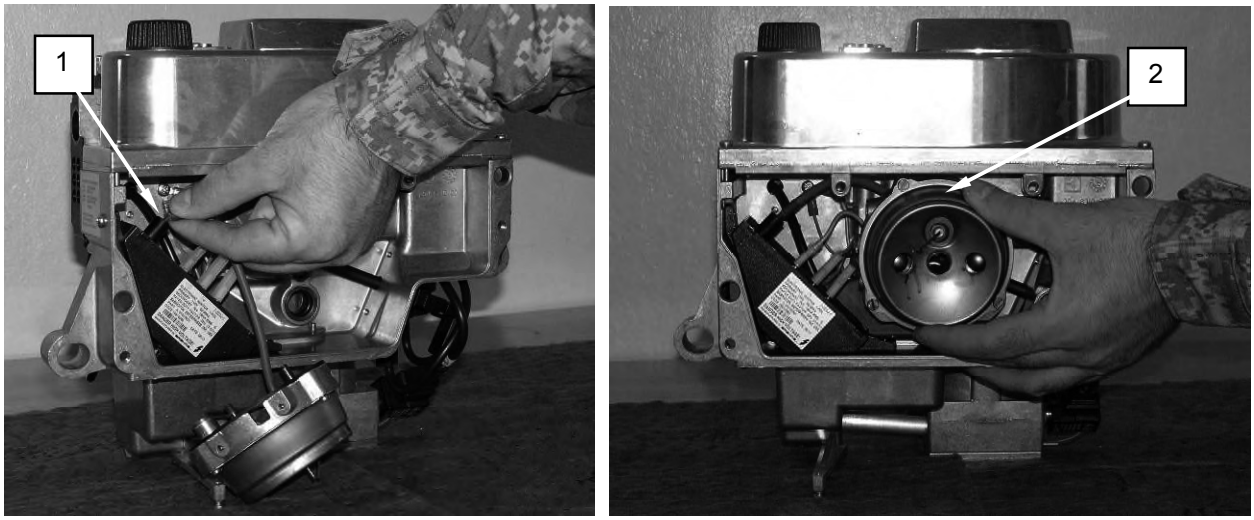


Figure 8. Atomizing Chamber Replacement.

5. Install the front flange of the lower fan housing (Figure 9, Item 1) to cover the atomizing chamber (Figure 9, Item 3). Secure by replacing and tightening the four flange retaining screws (Figure 9, Item 4). If the air tube/flame tube assembly (Figure 9, Item 2) was removed, replace it prior to placing front flange back on the lower housing.

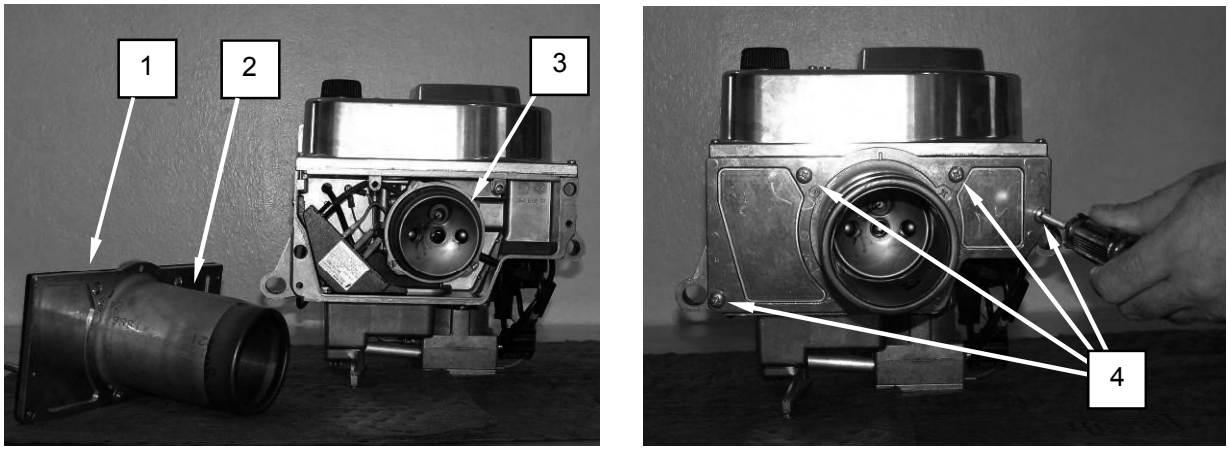


Figure 9. Lower Fan Housing Flange Replacement.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

FUEL SUMP
REPLACE

INITIAL SETUP:

Tools and Special Tools

Tool Kit, GMTK (WP 0069, Item 4)

Personnel Required

Quartermaster Equipment Repairer 91J (1)

Materials/Parts

Chemical and Oil Protective Gloves (WP 0069, Item 9)
Industrial Goggles (WP 0069, Item 10)
Oil and Water Absorbent Material (WP 0069, Item 1)
Wiping Rag (WP 0069, Item 13)

Equipment Condition

TRH Burner removed from TRH (WP 0026)
Power disconnected from TRH

REPLACE

CAUTION

Ensure fuel is drained from TRH Burner IAW WP 0026. Failure to do so will cause damage to control box.

1. Remove five retaining screws from the fuel sump (Figure 1, Item 1 and Item 2).
2. Remove cross connection tube by pulling away from fuel sump (Figure 1, Item 3).

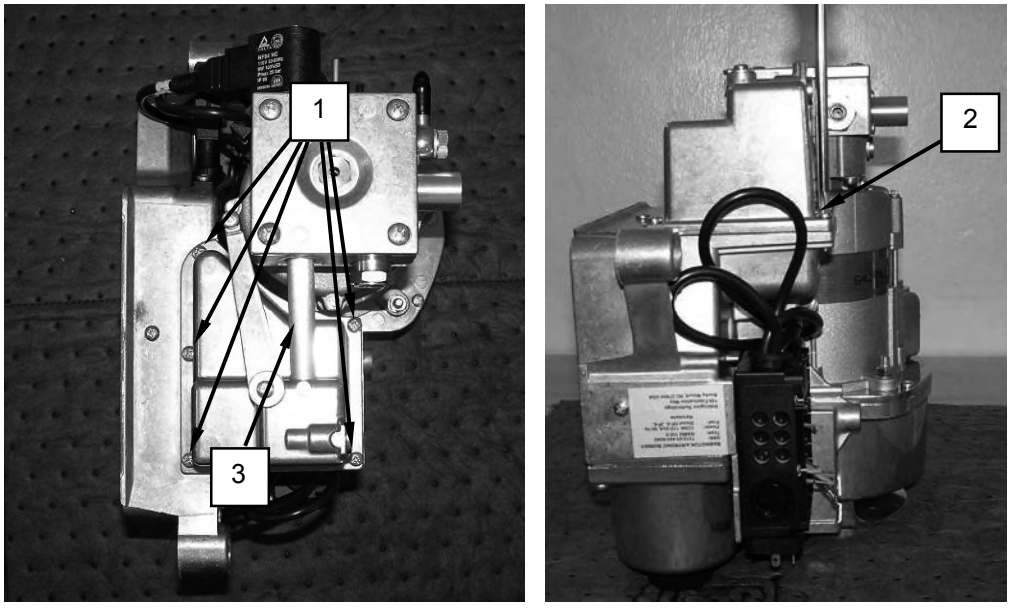


Figure 1. Fuel Sump Removal.

REPLACE – CONTINUED

3. Remove fuel sump (Figure 2, Item 1) from burner assembly.

4. Check the O-rings (Figure 2, Item 4) on the cross connection tube (Figure 2, Item 3) to make sure they are flexible and not damaged. Discard and replace any bad O-rings.

5. While gently twisting, reconnect the crossover tube (Figure 2, Item 3). When reconnecting the crossover tube, use a small amount of fuel to lubricate the O-rings (Figure 2, Item 4).

6. Align the crossover tube (Figure 2, Item 3), install the replacement sump (Figure 2, Item 1), and retain with five screws (Figure 2, Item 2).

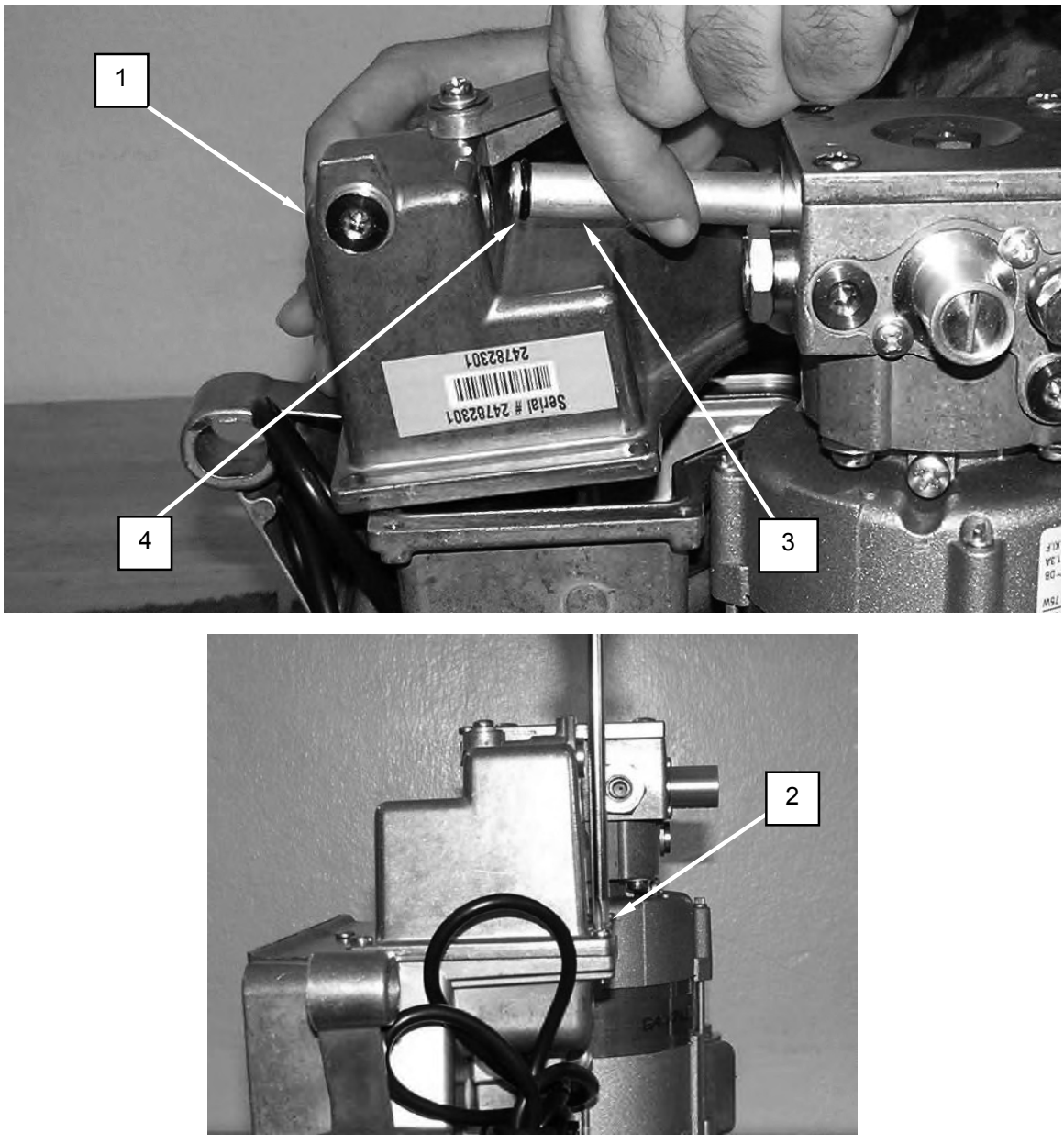


Figure 2. Install Replacement Fuel Sump.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

LID ASSEMBLY
REPAIR

INITIAL SETUP:

Tools and Special Tools	Personnel Required
Standard Automotive Tool Set (SATS) (WP 0069, Item 5)	Machinist 91E (1) Metal Worker 91W (1)
Materials/Parts	**References**
Pop Rivet (WP 0069, Item 14)	WP 0022

REPAIR

Lid Assembly repair consists of replacing the rubber strip.

1. Remove lid (Figure 1, Item 1) from TRH IAW WP 0022 and place top down.
2. Drill out the rivets that hold the four gasket flanges (Figure 1, Item 2) in place. Discard rivets. If screws are used to secure the gasket flanges to the lid, remove the screws and set aside.
3. Remove damaged lid gasket (Figure 1, Item 3) and replace with new lid gasket.
4. Adjust lid gasket flanges (Figure 1, Item 2) around new lid gasket (Figure 1, Item 3) and align holes in flanges with holes in lid (Figure 1, Item 1).
5. Secure lid gasket flanges (Figure 1, Item 2) with rivets.
6. Install lid (Figure 1, Item 1) on TRH tank IAW WP 0022.

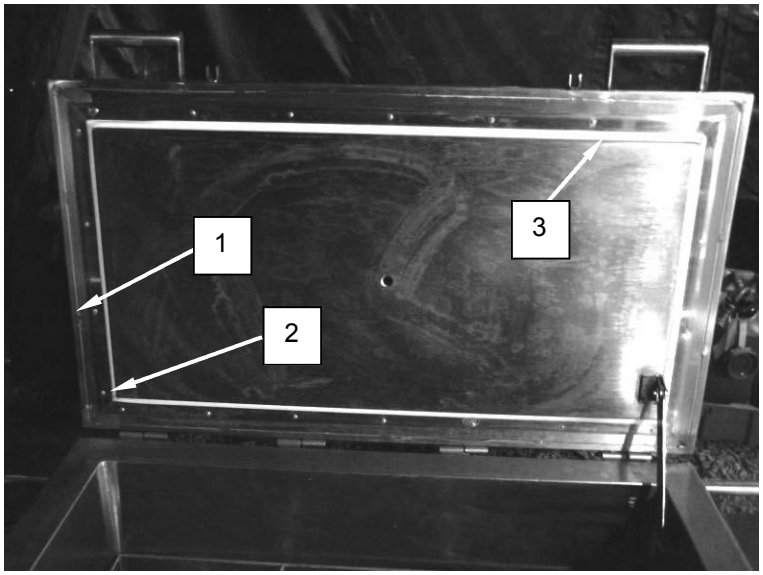


Figure 1. Replacing TRH Lid Gasket.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

TANK ASSEMBLY
REPAIR

INITIAL SETUP:

Tools and Special Tools

Arc Welding Machine (TIG) (WP 0069, Item 6)

Standard Automotive Tool Set (SATS) Base (WP 0069, Item 5)

Materials/Parts

Pop Rivet (WP 0069, Item 14)
Stainless Welding Rod (WP 0069, Item 15)

Personnel Required

Machinist 91E (1)
Metal Worker 91W (1)

Equipment Condition

Tank empty and drained

References

WP 0022

REPAIR

Repair of the TRH Tank consists of welding minor cracks in the TRH Tank body and replacing the lid latches and/or lid latch catch plates.

Tank and Lid Welding Repair

Weld cracks in the TRH tank body using standard stainless steel welding procedures and local SOP.

WARNING

The TRH weighs approximately 320 pounds when empty and 525 pounds when full. Proper lifting technique is required to prevent damage to equipment and personnel. Always drain water tank before lifting or moving TRH. Four (4) persons must be used to move the TRH onto its top, lifting with legs, not back, to prevent injury. Do not use the lid handles to move the TRH, use the two lift bars on the TRH.

NOTE

The TRH Tank, Tank Lid and other components of the TRH are made of varying gauges of T304 Stainless Steel that requires precision welding using TIG welding equipment. Repairs of minor cracks, splits or broken welds will be determined by the Senior Field Maintenance Supervisor, based on the availability of proper welding equipment and materials. Assessment of reparability will also be based upon the size, location and impact on TRH performance of the damage. Severe crushing or large punctures of the tank or lid can be rationale for a “not economically repairable” determination by the Senior Field Maintenance Supervisor.

1. If determined to be feasible, repair minor cracks, splits or broken welds using standard TIG welding procedures.

REPAIR - CONTINUED

2. Carefully grind and polish the weld for a finished appearance.

END OF TASK

Lid Latch Replacement

NOTE

The TRH tank is made of stainless steel, and must be welded with gas shielded arc welders or with stainless steel rods specifically made for conventional arc welders.

1. Remove the damaged lid latch (Figure 1, Item 1) by sawing with a metal cutting saw.

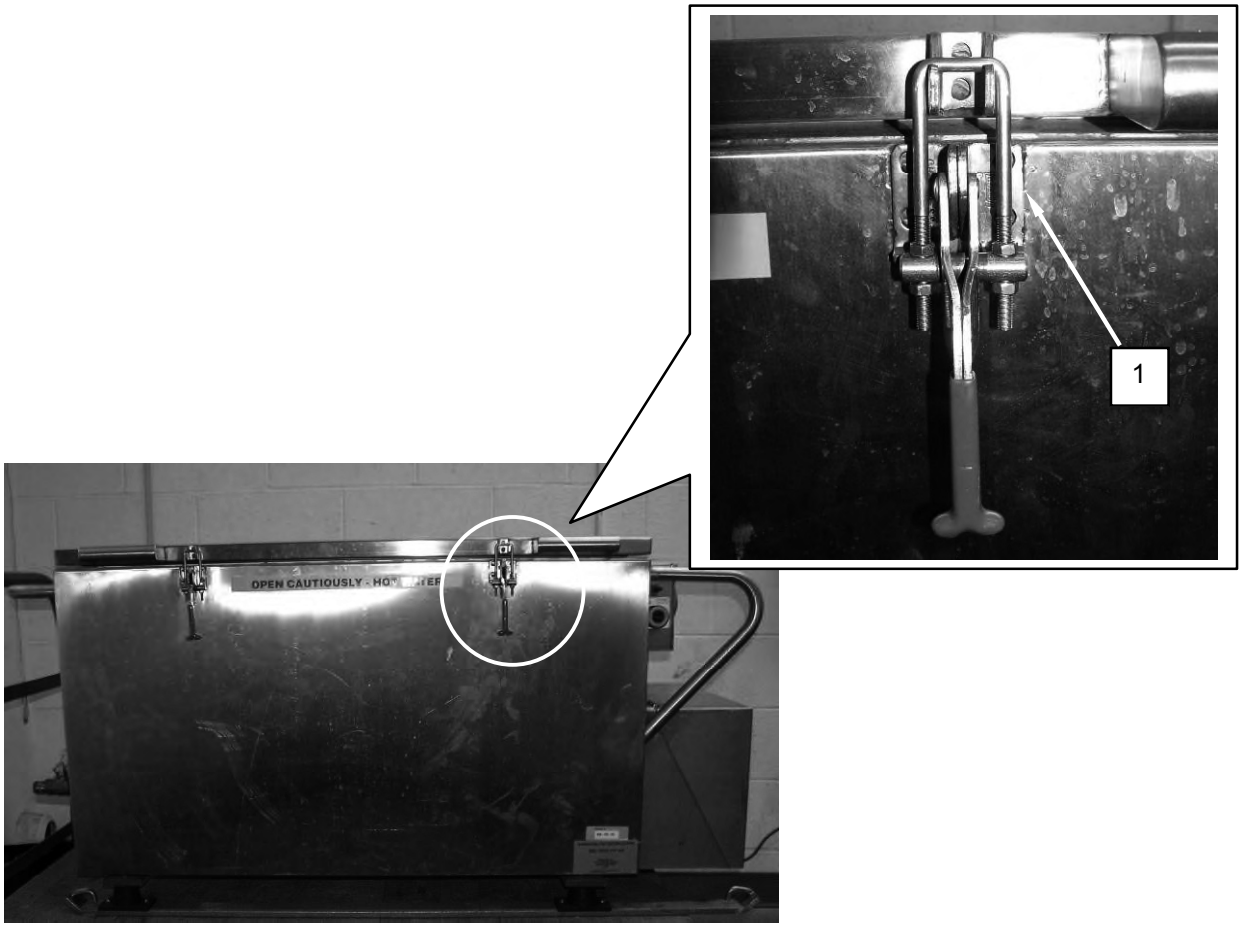


Figure 1. Lid Latch Placement.

2. Using a grinding wheel, smooth the area around the sawed-off latch.
3. Align a replacement latch to TRH tank.
4. Secure latch to TRH tank body with four pop rivets.
5. Ensure proper latch function by operating lid latch.
6. Adjust lid latch IAW WP 0022.

END OF TASK

REPAIR - CONTINUED

Lid Latch Catch Plate Replacement

NOTE

The TRH tank is made of stainless steel, and must be welded with gas shielded arc welders or with stainless steel rods specifically made for conventional arc welders.

1. Remove the damaged lid latch catch plate (Figure 2, Item 1) by sawing with a metal cutting saw.

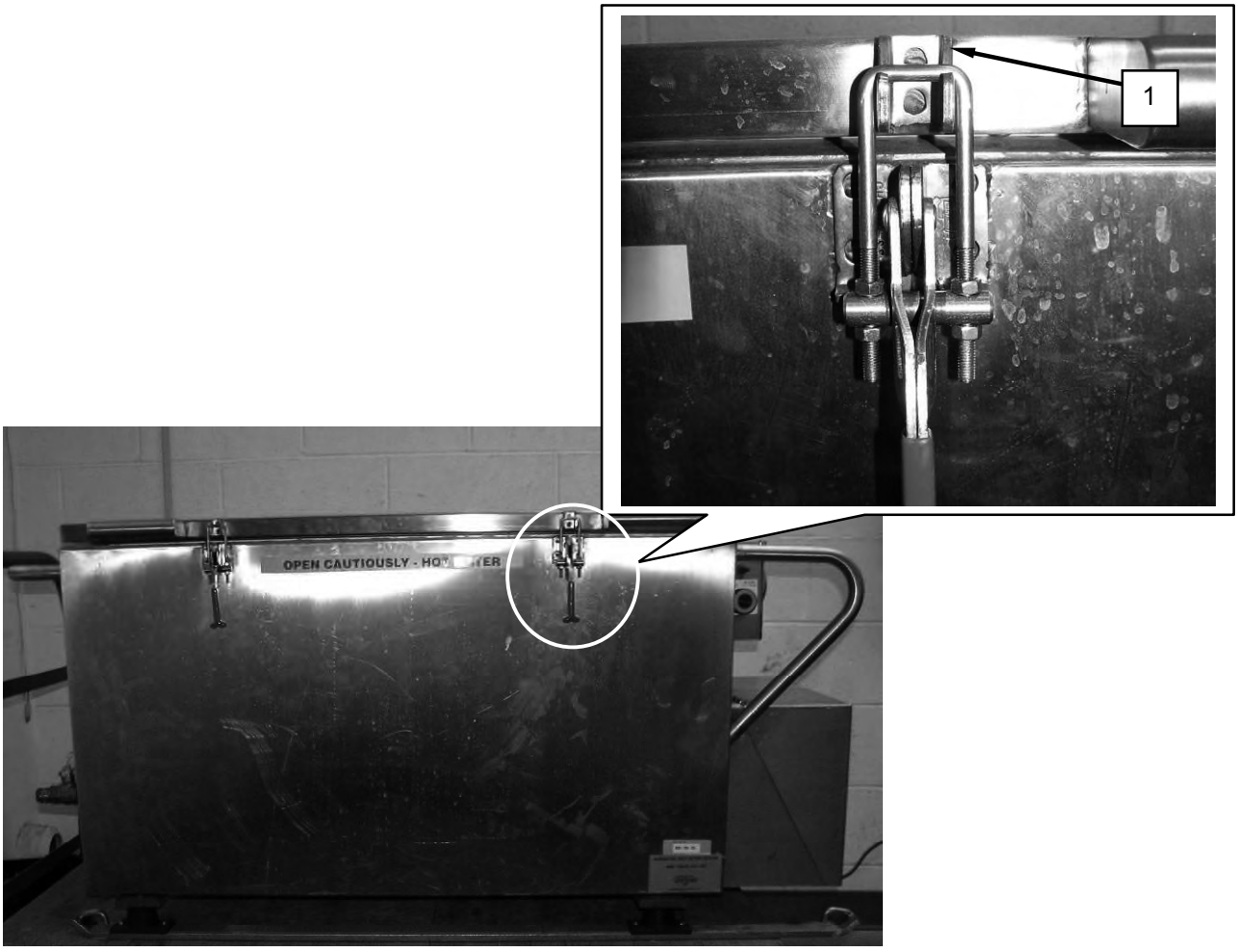


Figure 2. Lid Latch Catch Plate Placement.

2. Using a grinding wheel, smooth the area around the sawed-off latch.
3. Align replacement catch plate to TRH tank.
4. Secure catch plate to TRH tank body with two pop rivets.
5. Ensure proper latch function by operating lid latch.
6. Adjust lid latch IAW WP 0022.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

TRAY RACK, RATION
REPAIR

INITIAL SETUP:

Tools and Special Tools

Welding Machine, Arc (TIG) (WP 0069, Item 6)

Materials/Parts

Rod, Welding, Stainless (WP 0069, Item 15)

Personnel Required

Machinist 91E (1)
Metal Worker 91W (1)

Equipment Condition

Tank empty and drained

References

WP 0020

REPAIR

NOTE

Damage to the tray ration rack may be repaired by welding. Do not attempt to weld a tray ration rack that has been damaged so that the structural integrity of the rack has been compromised.

1. Remove the tray ration rack IAW WP 0020.
2. Repair damaged tray ration rack (Figure 1, Item 1) by welding IAW unit welding SOP.
3. Install the tray ration rack IAW WP 0020.

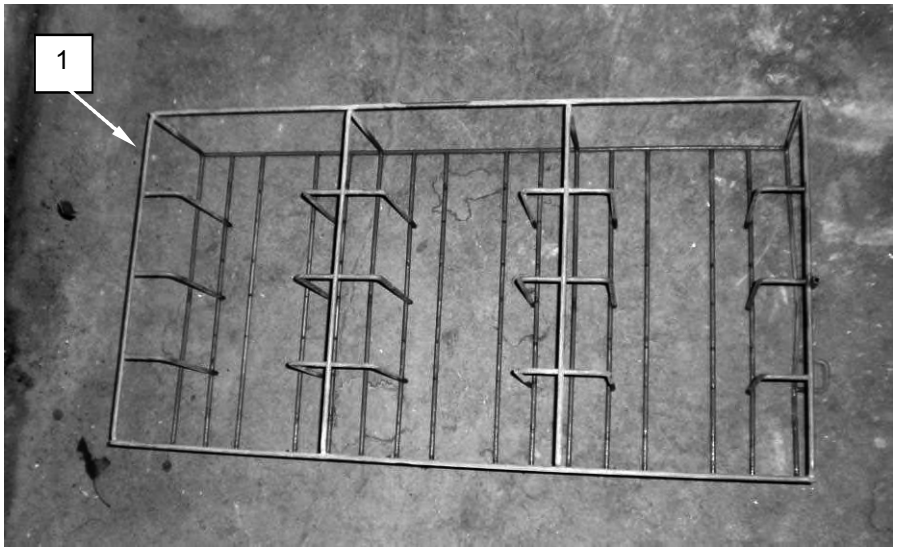


Figure 1. Tray Ration Rack.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

HARDWARE AND SHELVING
REPLACE

INITIAL SETUP:

Tools and Special Tools

Tool Kit, GMTK (WP 0069, Item 4)

Personnel Required

Quartermaster Equipment Repairer 91J (1) and MOS non-specific (1)

Equipment Condition

Shelving Empty (WP 0005)

REPLACE

Remove Driver Side Storage Bracket

NOTE

Depending on the installation of equipment, the inverter may be installed in the HMMWV. Skip steps 1-3 if the inverter is installed in the HMMWV.

1. Remove four screws (Figure 1, Item 2) retaining the inverter (Figure 1, Item 1) in the driver side storage rack (Figure 1, Item 6). Remove and set aside inverter.

2. Remove two screws and two nuts (Figure 1, Item 3) securing the NATO adapter bracket (Figure 1, Item 4) in the driver side storage rack. Remove the NATO adapter bracket (Figure 1, Item 4)

3. Remove NATO adapter (Figure 1, Item 5) from the driver side storage bracket (Figure 1, Item 6). Remove and set aside NATO adapter.

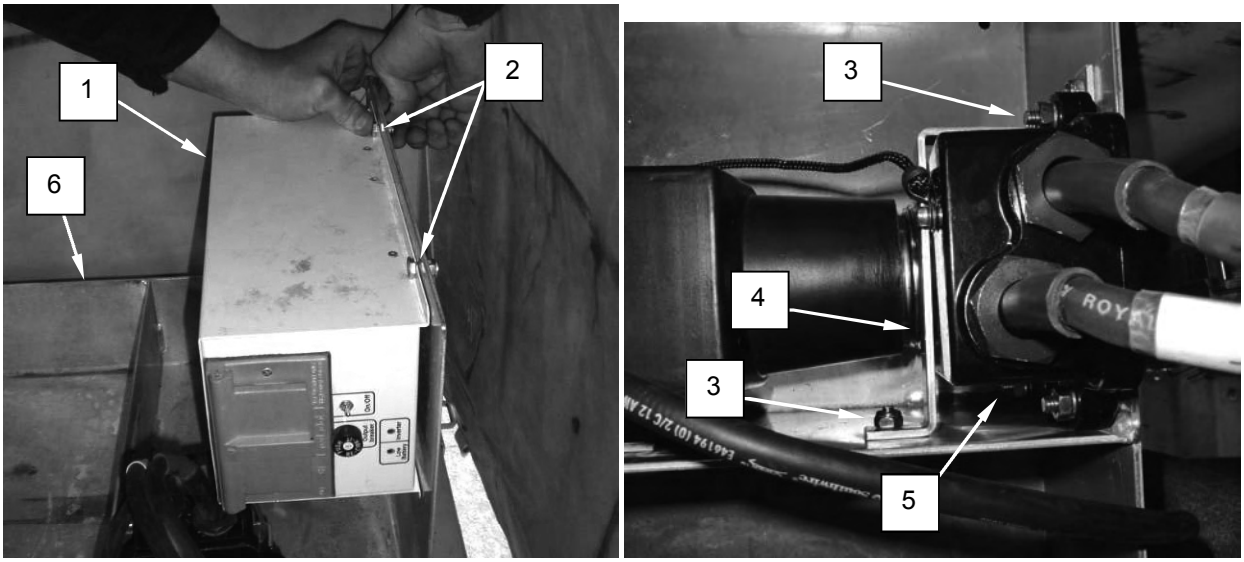


Figure 1. Removing Inverter.

REPLACE – CONTINUED

4. Remove one bolt (Figure 2, Item 2), two large flat washers (Figure 2, Item 1), one lockwasher (Figure 2, Item 3), and one locknut (Figure 2, Item 4) securing the leg of the driver side storage rack to the wheel well. One person must hold the head of the bolt still from inside the LTT while another person turns the nut inside the wheel well from outside the LTT.

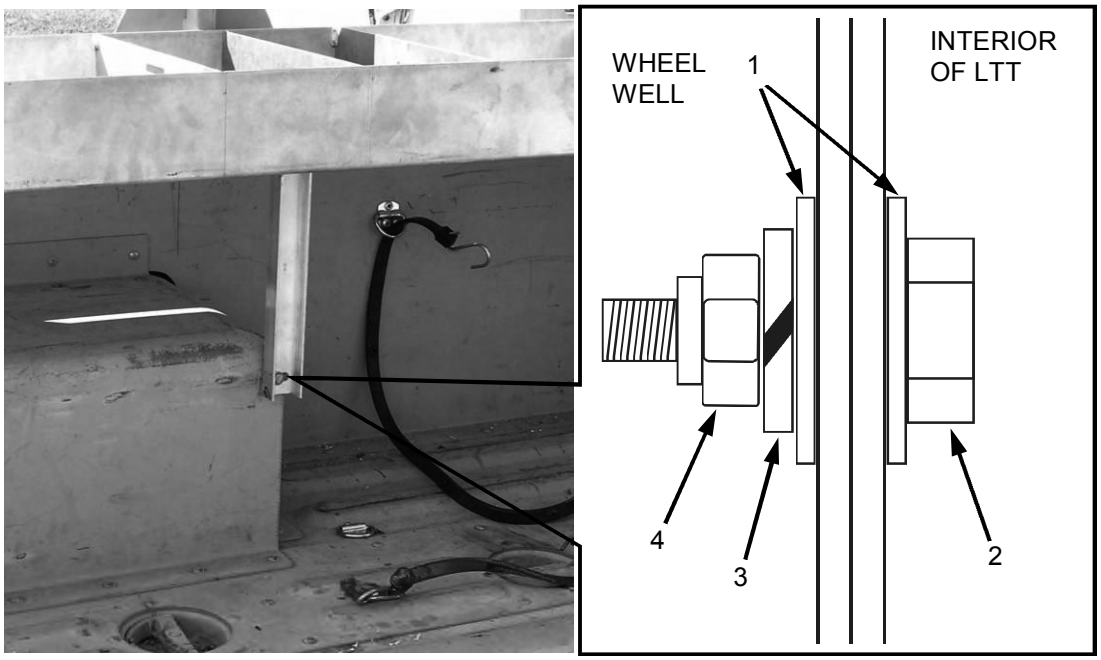


Figure 2. LTT Driver Side Storage Rack.

5. Remove the twelve bolts, flat washers, and lockwasher securing the driver side storage rack to the LTT canopy support posts (Figure 3, Item 5) on the driver side of the LTT. Retain flat washer. Discard bolts and lockwashers.

6. Remove the storage bracket from the LTT.

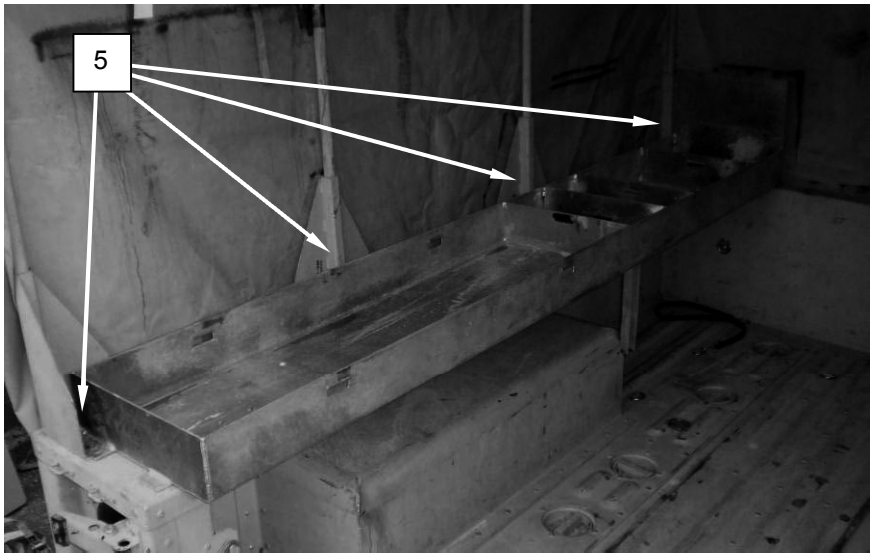


Figure 3. LTT Driver Side Storage Rack.

END OF TASK

REPLACE – CONTINUED

Install Driver Side Storage Bracket

1. Place storage bracket into position and align storage rack screw holes with canopy support post bolt holes.

2. Secure storage bracket to LTT by hand tightening twelve canopy support bolts, the lock washer provided with tray, and the retained large washer.

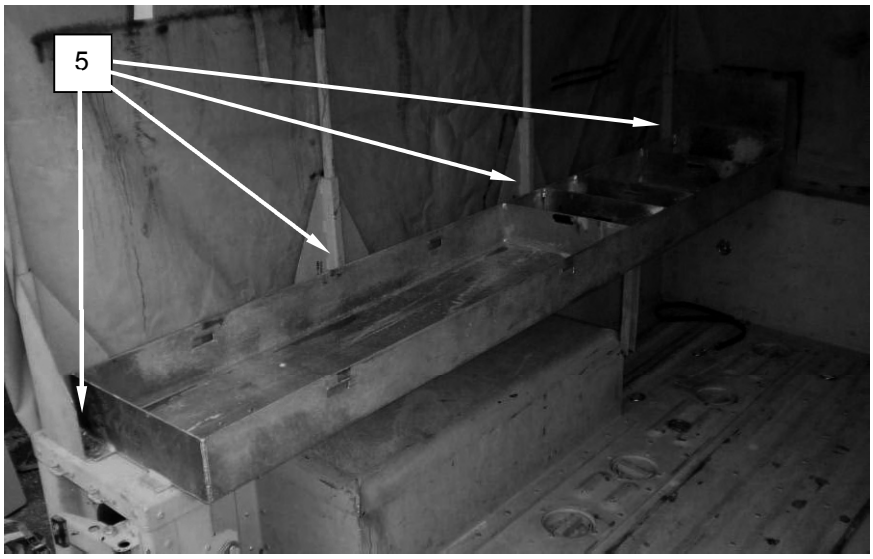


Figure 4. LTT Driver Side Storage Rack.

3. Align driver side storage rack with wheel well bolt hole (Figure 5). Install and tighten bolt using two personnel. One person should hold bolt in place from inside cargo bed while the other tightens nut from outside wheel well.

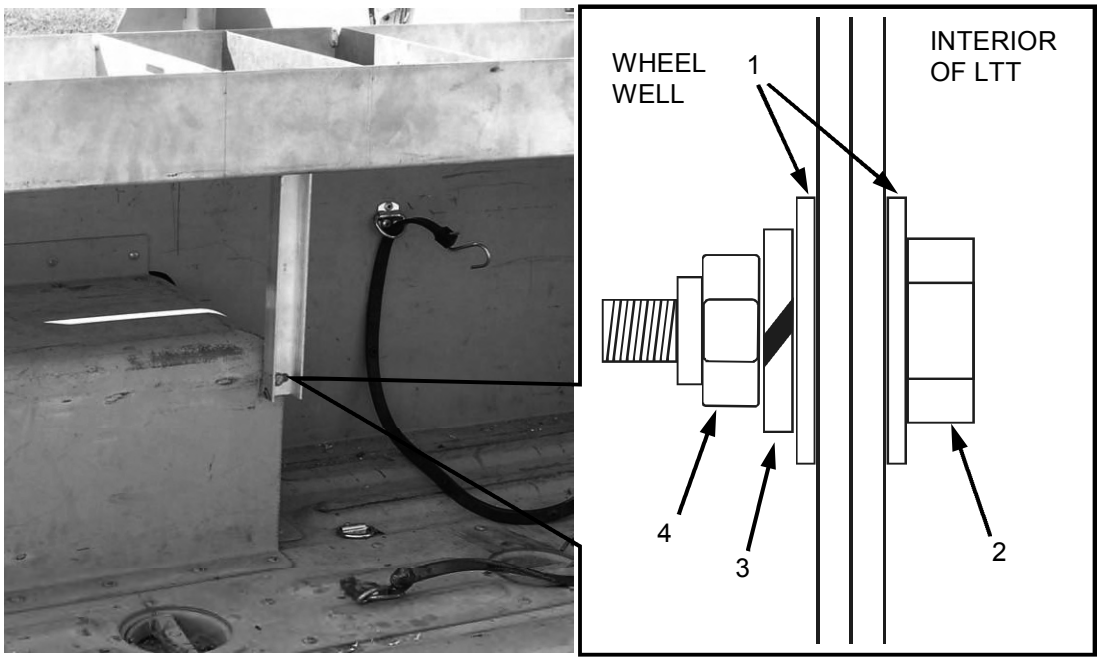


Figure 5. Securing LTT Driver Side Storage Rack to Wheel Well.

REPLACE – CONTINUED

CAUTION

Be careful not to over tighten canopy support bolts, because over tightening bolts may strip the threaded inserts installed on the LTT.

4. Securely tighten canopy support bolts (Figure 6, Item 1), as required.

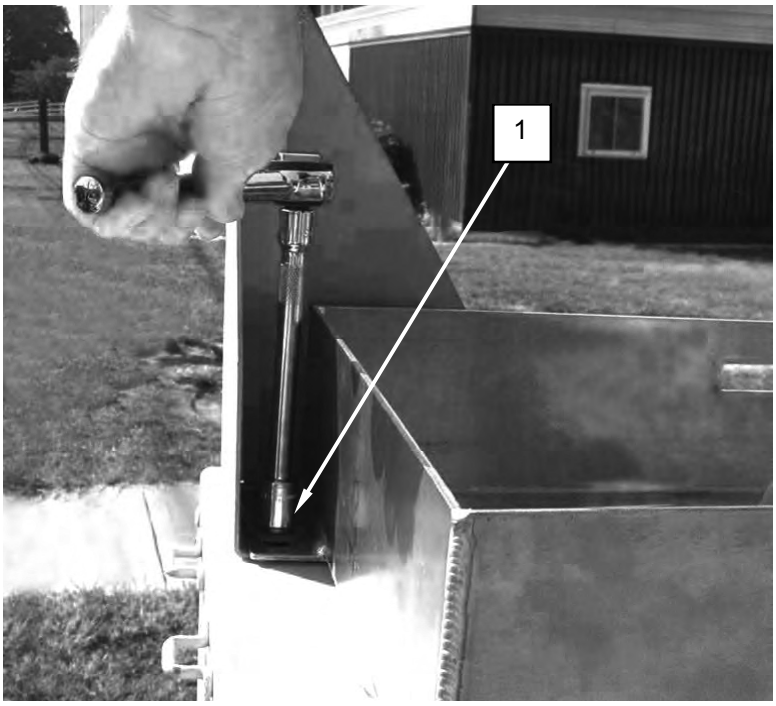


Figure 6. Securing LTT Driver Side Storage Rack.

REPLACE – CONTINUED

NOTE

Depending on the installation of equipment, the inverter may be installed in the HMMWV. Skip steps 1-3 if the inverter is installed in the HMMWV.

5. Place press fit adapter (Figure 7, Item 1) top down into right rear corner in front compartment of the driver side storage rack with back of adapter flush with compartment.

6. Ensuring all cords are clear and not obstructing work area, secure NATO plug adapter into place with bracket and two retaining bolts (Figure 7, Item 2).

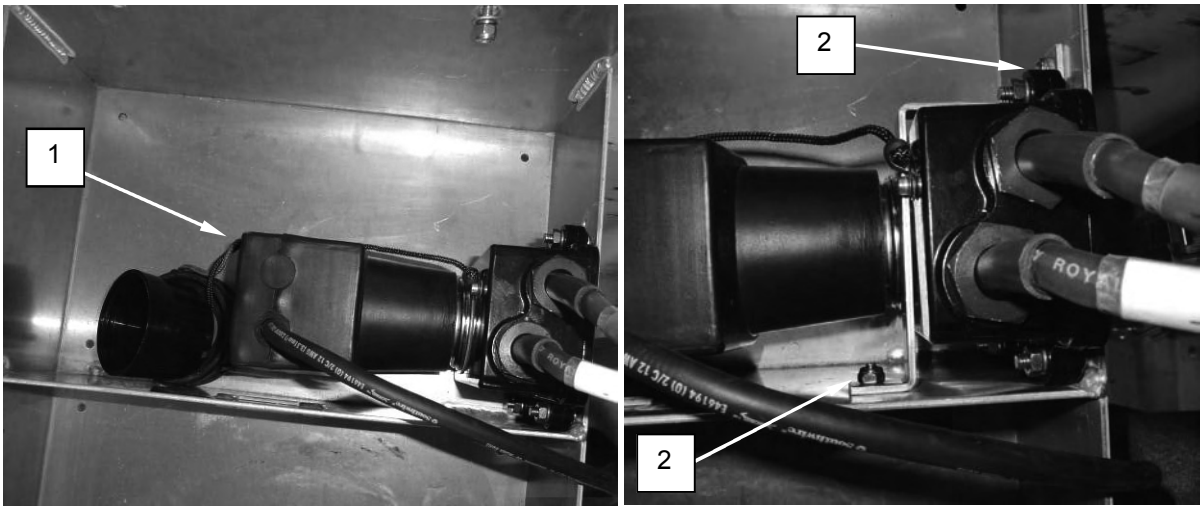


Figure 7. Securing Inverter Power Cord and Press Fit Adapter.

7. Mount the inverter to the support wall in the front of the driver side storage rack by removing top hex head bolts (Figure 8, Item 1) and loosening bottom hex head bolts. Align the inverter mounting grooves with the storage rack holes so that the inverter controls are facing the LTT cargo bed.

8. Tighten the hex head bolts on top (Figure 8, Item 1) and bottom of inverter.

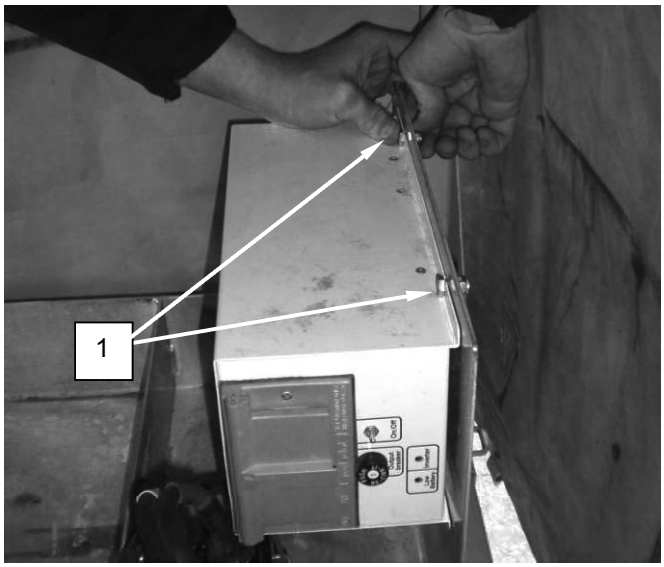


Figure 8. Inverter Placement.

END OF TASK

REPLACE – CONTINUED

Remove Passenger Side Storage Bracket

1. Remove five bolts (Figure 9, Item 2), five washers (Figure 9, Item 3), five lock washer (Figure 9, Item 4), and five locknut (Figure 9, Item 5) that secure storage bracket to LTT wheel well and support posts. One person should hold bolts in place from inside cargo bed while the other tightens nuts from outside wheel well.

2. Remove three bolts (Figure 9, Item 1), three washers, and three lock washers that secure storage bracket to LTT.

3. Remove passenger side storage bracket.

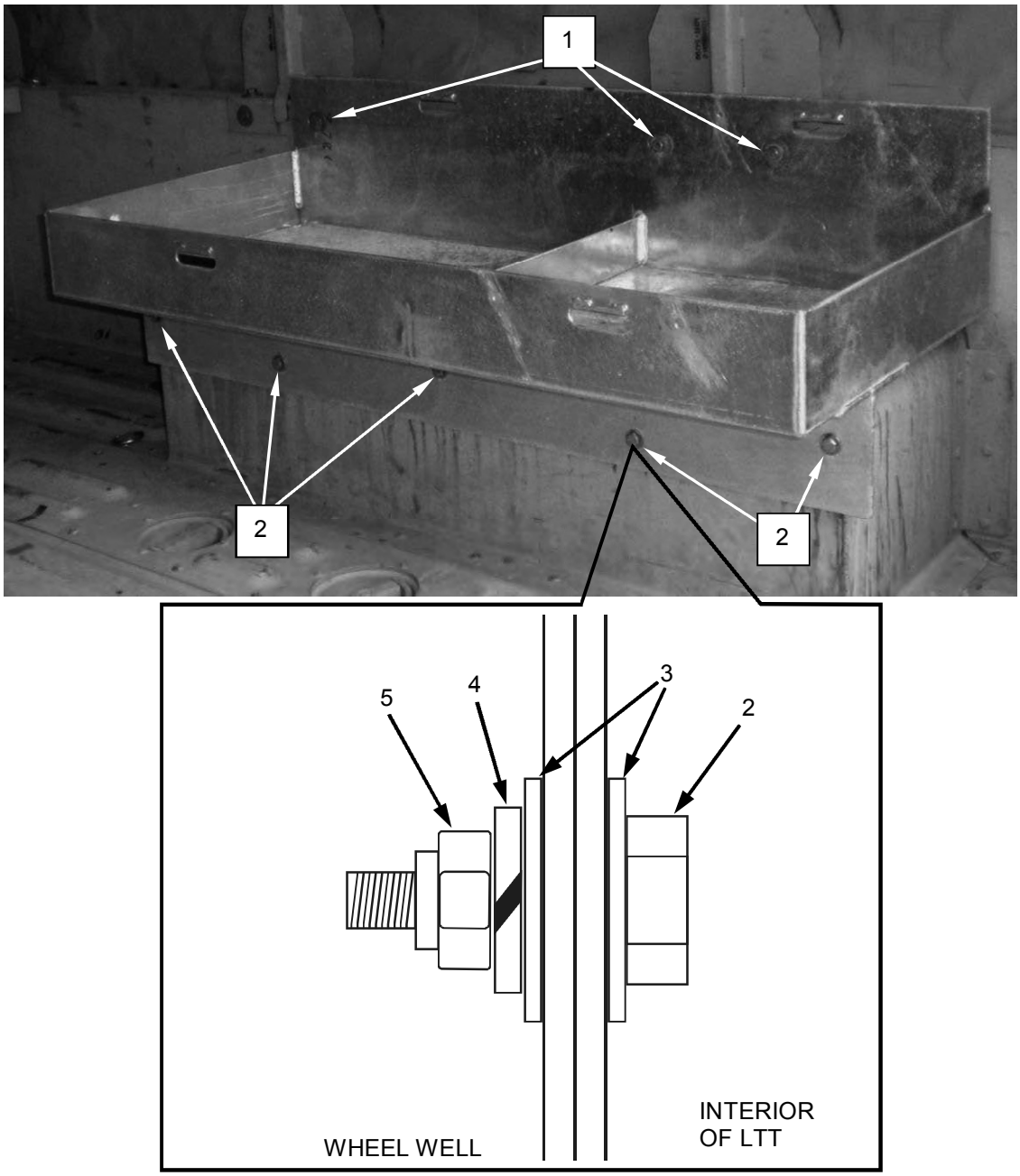


Figure 9. LTT Passenger Side Storage Bracket.

END OF TASK

REPLACE – CONTINUED

Install Passenger Side Storage Bracket

1. Align a replacement passenger side storage bracket (Figure 10, Item 9) to the LTT (Figure 10, Item 4) and secure top portion with three bolts (Figure 10, Item 1), three washers (Figure 10, Item 3), and three lock washers (Figure 10, Item 2).

2. Install five bolts (Figure 10, Item 8), ten washers (Figure 10, Item 7), five lock washer (Figure 10, Item 6), and five locknut (Figure 10, Item 5) that secure bottom of storage bracket to LTT wheel well. One person should hold bolts in place from inside cargo bed while the other tightens nuts from outside wheel well.

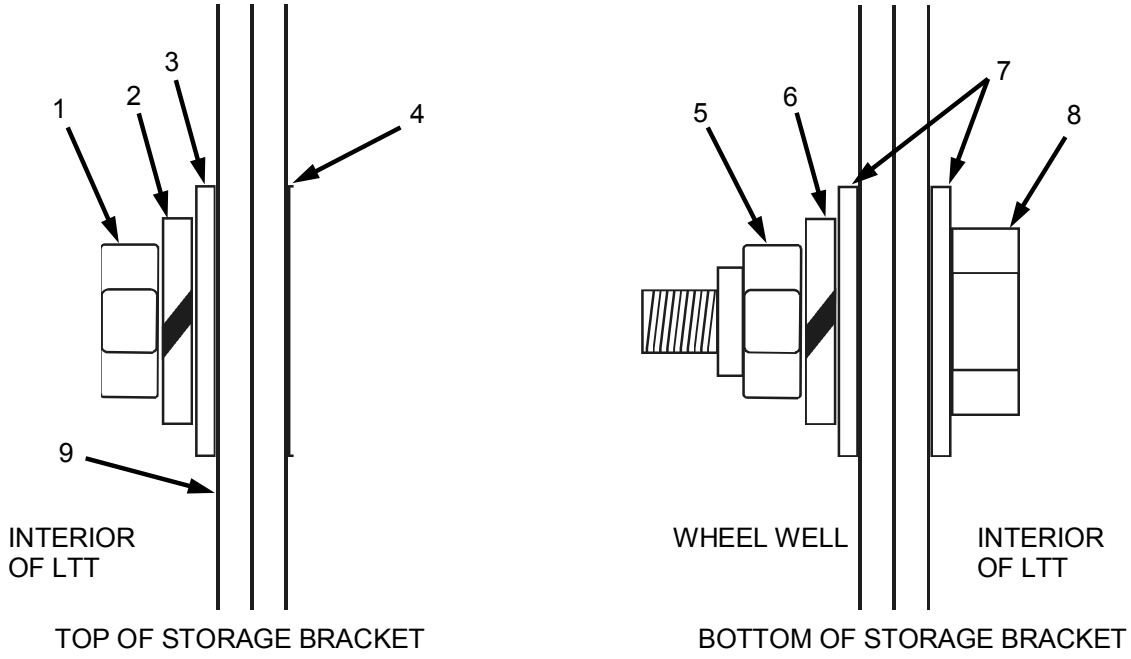


Figure 10. LTT Passenger Side Storage Bracket Hardware Alignment.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

PREPARATION FOR STORAGE

INITIAL SETUP:

References	Equipment Description
TM 38-230-2 TM 9-2330-392-14&P WP 0005 WP 0008 WP 0014 WP 0026	AK set up for use IAW WP 0014 Fuel drained IAW WP 0026

ADMINISTRATIVE STORAGE

Placement of equipment in administrative storage should be for short periods of time when a shortage of maintenance effort exists. Items should be in mission readiness within 24 hours or within the time factors as determined by the directing authority. During the storage period appropriate maintenance records will be kept.

Before placing equipment in administrative storage, current maintenance services and equipment serviceability criteria (ESC) evaluations should be completed, shortcomings and deficiencies should be corrected, and all modification work orders (MWOs) should be applied.

Storage site selection. Inside storage is preferred for items selected for administrative storage. If inside storage is not available, trucks, vans, or container express (CONEX) containers may be used.

PREPARATION FOR STORAGE

Preservation, packaging, and packing of military supplies and equipment are described in TM 38-230-2.

STORAGE

NOTE

Be sure the storage location is on firm, level ground and at a well-drained site.

Store equipment in a building, shed, or under cover. If the equipment is to be stored outside, place on a pallet or planking; place a canvas tarp or waterproof cover over it.

To prepare the TRH for storage, it is necessary to remove the TRH Burner and drain the TRH Burner of fuel IAW WP 0026. Replace the burner in the TRH burner compartment IAW WP 0026.

The TRH and AK components should be cleaned (WP 0008) and stored indoors or IAW unit SOP.

Refer to WP 0005, Preparation for Movement to pack the AK components in the LTT for storage or movement.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

PREPARATION FOR SHIPMENT

INITIAL SETUP:

Tools and Special Tools

Tool Kit, GMTK (WP 0069, Item 4)

Personnel Required

Quartermaster Equipment Repairer 91J (1)

Materials/Parts

Oil and Water Absorbent Material (WP 0068, Item 1)
Wiping Rag (WP 0068, Item 13)

References

TM 38-230-2

PREPARATION FOR SHIPMENT

Preservation, packaging, and packing of military supplies and equipment are described in TM 38-230-2.

PACKING FOR SHIPMENT

If available, use original packing materials and shipping cartons or a suitable substitute.

END OF WORK PACKAGE

INTRODUCTION

Scope

The Illustrated List of Manufactured Items includes complete instructions for making items authorized to be manufactured or fabricated at the field maintenance level.

How to Use the Index of Manufactured Items

A Part Number Index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the information which covers fabrication criteria.

Explanation of the Illustrations of Manufactured Items

All instructions needed by maintenance personnel to manufacture the item are included on the illustrations. All bulk materials needed for manufacture of an item are listed by part number or specification number in a tabular list on the illustration.

END OF WORK PACKAGE

ILLUSTRATED LIST OF MANUFACTURED ITEMS

This Work Package includes complete instructions for manufacturing or fabricating authorized items locally as listed in Table 1, Illustrated List of Manufactured Items Index. All bulk materials needed to manufacture an item are listed by part number or specification number. References are provided as needed.

Table 1. Illustrated List of Manufactured Items Index.

Item Name	Reference
NATO Adapter Assembly	WP 0014
Extension Cord Cable Assembly (50 foot)	WP 0014

MANUFACTURING PROCEDURES

NATO ADAPTER ASSEMBLY

Tools and Special Tools
Tool Kit, GMTK (WP 0069, Item 4)

Personnel Required
Quartermaster Equipment Repairer 91J (1)

Materials/Parts
Cable Assembly, Special Purpose, Electrical (WP 0060, Item 21)
Snap Hook (carabiner) (WP 0060, Item 22)
Strap, Tiedown, Electrical (WP 0060, Item 23)

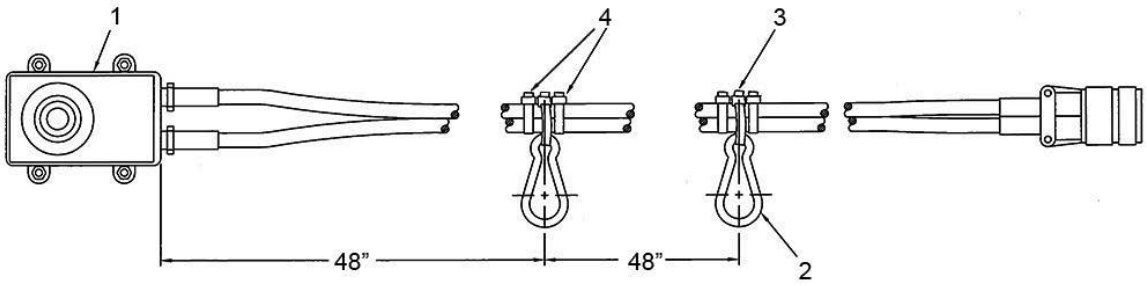


Figure 1. Dimensions for NATO Adapter Assembly.

1. Lay cable assembly (Figure 1, Item 1) on a flat surface.
2. Locate snap hooks (Figure 1, Item 2) adjacent to cable according to dimensions in Figure 1.
3. Fasten each snap hook to the cable using a single cable tie (tiedown strap) (Figure 1, Item 3).
4. Fasten an additional cable tie (Figure 1, Item 4) immediately to the right and left of each cable tie installed in Step 3.
5. Make cable ties as tight as possible and cut down leaving no burrs or sharp edges.

END OF TASK

EXTENSION CORD CABLE

Tools and Special Tools
Tool Kit, GMTK (WP 0069, Item 4)

Personnel Required
Quartermaster Equipment Repairer 91J (1)

Materials/Parts
Strap, Tiedown, Electrical (WP 0060, Item 25)
Snap Hook (carabiner) (WP 0060, Item 26)
Extension Cord, MBU (50 foot)
(WP 0060, Item 27)

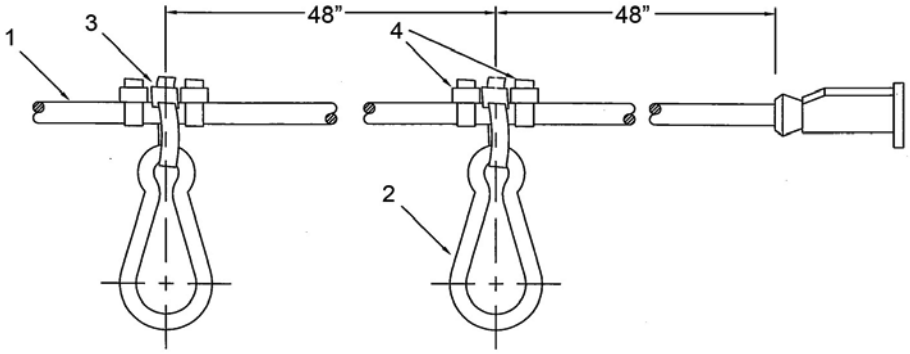


Figure 2. Dimensions for Extension Cord Cable.

1. Lay MBU extension cord (Figure 2, Item 1) on a flat surface.
2. Locate snap hooks (Figure 2, Item 2) adjacent to cable according to dimensions in Figure 2.
3. Fasten each snap hook to the cable using a single cable tie (tiedown strap) (Figure 2, Item 3).
4. Fasten an additional cable tie (Figure 2, Item 4) immediately to the right and left of each cable tie installed in Step 3.
5. Make cable ties as tight as possible and cut down leaving no burrs or sharp edges.

END OF TASK

END OF WORK PACKAGE

CHAPTER 7

PARTS INFORMATION
FOR
ASSAULT KITCHEN

OPERATOR AND FIELD MAINTENANCE

REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)
INTRODUCTION

INTRODUCTION

SCOPE

This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of maintenance of the Assault Kitchen. It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the source, maintenance, and recoverability (SMR) codes.

GENERAL

In addition to the Introduction work package, this RPSTL is divided into the following work packages.

1.Repair Parts List Work Packages. Work packages containing lists of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. These work packages also include parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Sending units, brackets, filters, and bolts are listed with the component they mount on. Bulk materials are listed by item name in FIG. BULK at the end of the work packages. Repair parts kits are listed at the end of the individual work packages. Repair parts for reparable special tools are also listed in a separate work package. Items listed are shown on the associated illustrations.

2.Special Tools List Work Packages. Work packages containing lists of special tools, special TMDE, and special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in the DESCRIPTION AND USABLE ON CODE (UOC) column). Tools that are components of common tool sets and/or Class VII are not listed.

3. Cross-Reference Indexes Work Packages. There are two cross-reference indexes work packages in this RPSTL: the National Stock Number (NSN) Index work package, and the Part Number (P/N) Index work package. The National Stock Number Index work package refers you to the figure and item number. The Part Number Index work package refers you to the figure and item number.

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES

ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.

SMR CODE (Column (2)). The SMR code containing supply/requisitioning information, maintenance level authorization criteria, and disposition instruction, as shown in the following breakout. This entry may be subdivided into 4 subentries, one for each service.

TABLE 1. SMR Code Explanation.

Source Code XX	Maintenance Code XX		Recoverability Code X
1st two positions: How to get an item.	3rd position: Who can install, replace, or use the item.	4th position: Who can do complete repair* on the item.	5th position: Who determines disposition action on unserviceable items.

*Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

REPAIR PARTS AND SPECIAL TOOLS LIST – CONTINUED

Source Code. The source code tells you how you get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

Source Code	Application/Explanation
PA PB PC PD PE PF PG PH PR PZ	**NOTE** Items coded PC are subject to deterioration. Stock items; use the applicable NSN to requisition/request items with these source codes. They are authorized to the level indicated by the code entered in the 3rd position of the SMR code.
KD KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance level indicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.
MF-Made at field MH-Made at below depot/sustainment level ML-Made at SRA MD-Made at depot MG-Navy only	Items with these codes are not to be requisitioned/requested individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk material group work package of the RPSTL. If the item is authorized to you by the 3rd position code of the SMR code, but the source code indicates it is made at higher level, order the item from the higher level of maintenance.
AF-Assembled by field AH-Assembled by below depot sustainment level AL-Assembled by SRA AD-Assembled by depot AG-Navy only	Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3rd position of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.
XA	Do not requisition an "XA" coded item. Order the next higher assembly.(Refer to NOTE below.)
XB	If an item is not available from salvage, order it using the CAGEC and part number.
XC	Installation drawings, diagrams, instruction sheets, field service drawings; identified by manufacturer's part number.
XD	Item is not stocked. Order an XD-coded item through normal supply channels using the CAGEC and part number given, if no NSN is available.

REPAIR PARTS AND SPECIAL TOOLS LIST – CONTINUED

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes except for those items source coded "XA" or those aircraft support items restricted by requirements of AR 750-1.

Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to use and repair support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

Third Position. The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to the following levels of maintenance:

Maintenance Code	Application/Explanation
F -	Field maintenance can remove, replace, and use the item.
H -	Below Depot Sustainment maintenance can remove, replace, and use the item.
L -	Specialized repair activity can remove, replace, and use the item.
G -	Afloat and ashore intermediate maintenance can remove, replace, and use the item (Navy only)
K -	Contractor facility can remove, replace, and use the item
Z -	Item is not authorized to be removed, replace, or used at any maintenance level
D -	Depot can remove, replace, and use the item.

*NOTE - Army may use C in the third position. However, for joint service publications, Army will use O.

Fourth Position. The maintenance code entered in the fourth position tells you whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (perform all authorized repair functions).

NOTE

Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.

Maintenance Code	Application/Explanation
F -	Field is the lowest level that can do complete repair of the item.
H -	Below depot sustainment is the lowest level that can do complete repair of the item.
L -	Specialized repair activity (enter specialized repair activity or TASMG designator) is the lowest level that can do complete repair of the item.
D -	Depot is the lowest level that can do complete repair of the item.
G -	Both afloat and ashore intermediate levels are capable of complete repair of item. (Navy only)
K -	Complete repair is done at contractor facility
Z -	Nonreparable. No repair is authorized.
B -	No repair is authorized. No parts or special tools are authorized for maintenance of "B" coded item. However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is shown in the fifth position of the SMR code as follows:

REPAIR PARTS AND SPECIAL TOOLS LIST – CONTINUED

Recoverability Code	Application/Explanation
Z -	Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the third position of the SMR code.
F -	Reparable item. When uneconomically reparable, condemn and dispose of the item at the field level.
H -	Reparable item. When uneconomically reparable, condemn and dispose of the item at the below depot sustainment level.
D -	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item are not authorized below depot level.
L -	Reparable item. Condemnation and disposal not authorized below Specialized Repair Activity (SRA).
A -	Item requires special handling or condemnation procedures because of specific reasons (such as precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.
G -	Field level reparable item. Condemn and dispose at either afloat or ashore intermediate levels. (Navy only)
K -	Reparable item. Condemnation and disposal to be performed at contractor facility

NSN (Column (3)). The NSN for the item is listed in this column.

CAGEC (Column (4)). The Commercial and Government Entity Code (CAGEC) is a five-digit code which is used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

PART NUMBER (Column (5)). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different part number from the number listed.

DESCRIPTION AND USABLE ON CODE (UOC) (Column (6)). This column includes the following information:

1. The federal item name, and when required, a minimum description to identify the item.
2. Part numbers of bulk materials are referenced in this column in the line entry to be manufactured or fabricated.
3. Hardness Critical Item (HCI). A support item that provides the equipment with special protection from electromagnetic pulse (EMP) damage during a nuclear attack.
4. The statement END OF FIGURE appears just below the last item description in column (6) for a given figure in both the repair parts list and special tools list work packages.

QTY (Column (7)). The QTY (quantity per figure) column indicates the quantity of the item used in the breakout shown on the illustration/figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column instead of a quantity indicates that the quantity is variable and quantity may change from application to application.

EXPLANATION OF CROSS-REFERENCE INDEXES WORK PACKAGES FORMAT AND COLUMNS

1. National Stock Number (NSN) Index Work Package. NSN's in this index are listed in National Item Identification Number (NIIN) sequence.

STOCK NUMBER Column. This column lists the NSN in NIIN sequence. The NIIN consists of the last nine digits of the NSN. When using this column to locate an item, ignore the first four digits of the NSN. However, the complete NSN should be used when ordering items by stock number. For example, if the NSN is 5385-01-574-1476, the NIIN is 01-574-1476.

FIG. Column. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in the repair parts list and special tools list work packages.

ITEM Column. The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

2. Part Number (P/N) Index Work Package. Part numbers in this index are listed in ascending alphanumeric sequence (vertical arrangement of letter and number combinations which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

PART NUMBER Column. Indicates the part number assigned to the item.

FIG. Column. This column lists the number of the figure where the item is identified/located in the repair parts list and special tools list work packages.

ITEM Column. The item number is the number assigned to the item as it appears in the figure referenced in the adjacent figure number column."

SPECIAL INFORMATION

UOC. The UOC appears in the lower left corner of the Description Column heading. Usable on codes are shown as "UOC:..." in the Description Column (justified left) on the first line under the applicable item/nomenclature. Uncoded items are applicable to all models. Identification of the UOCs used in the RPSTL are:

Code	Used On
FWW	Assault Kitchen

Fabrication Instructions. Bulk materials required to manufacture items are listed in the bulk material functional group of this RPSTL. Part numbers for bulk material are also referenced in the Description Column of the line item entry for the item to be manufactured/fabricated.

Index Numbers. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the NSN / Part Number (P/N) Index work packages and the bulk material list in the repair parts list work package.

HOW TO LOCATE REPAIR PARTS

1. When NSNs or Part Numbers Are Not Known.

First. Using the table of contents, determine the assembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and lists are divided into the same groups.

Second. Find the figure covering the functional group or the subfunctional group to which the item belongs.

Third. Identify the item on the figure and note the number(s).

Fourth. Look in the repair parts list work packages for the figure and item numbers. The NSNs and part numbers are on the same line as the associated item numbers.

2. When NSN Is Known.

First. If you have the NSN, look in the STOCK NUMBER column of the NSN index work package. The NSN is arranged in NIIN sequence. Note the figure and item number next to the NSN.

Second. Turn to the figure and locate the item number. Verify that the item is the one you are looking for.

3. When Part Number Is Known.

First. If you have the part number and not the NSN, look in the PART NUMBER column of the part number index work package. Identify the figure and item number.

Second. Look up the item on the figure in the applicable repair parts list work package.

END OF WORK PACKAGE

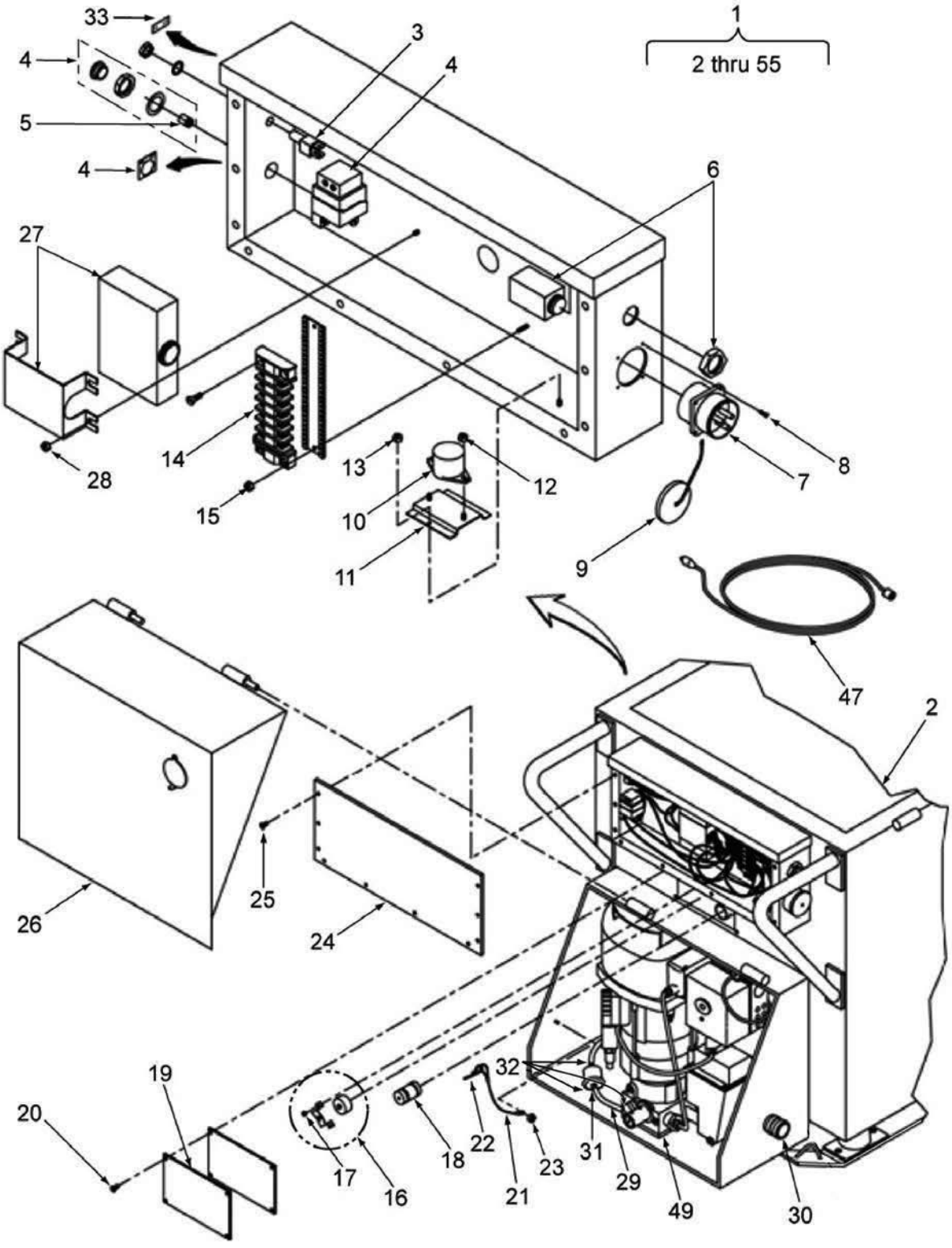


Figure 1. Tray Ration Heater (Sheet 1 of 2).

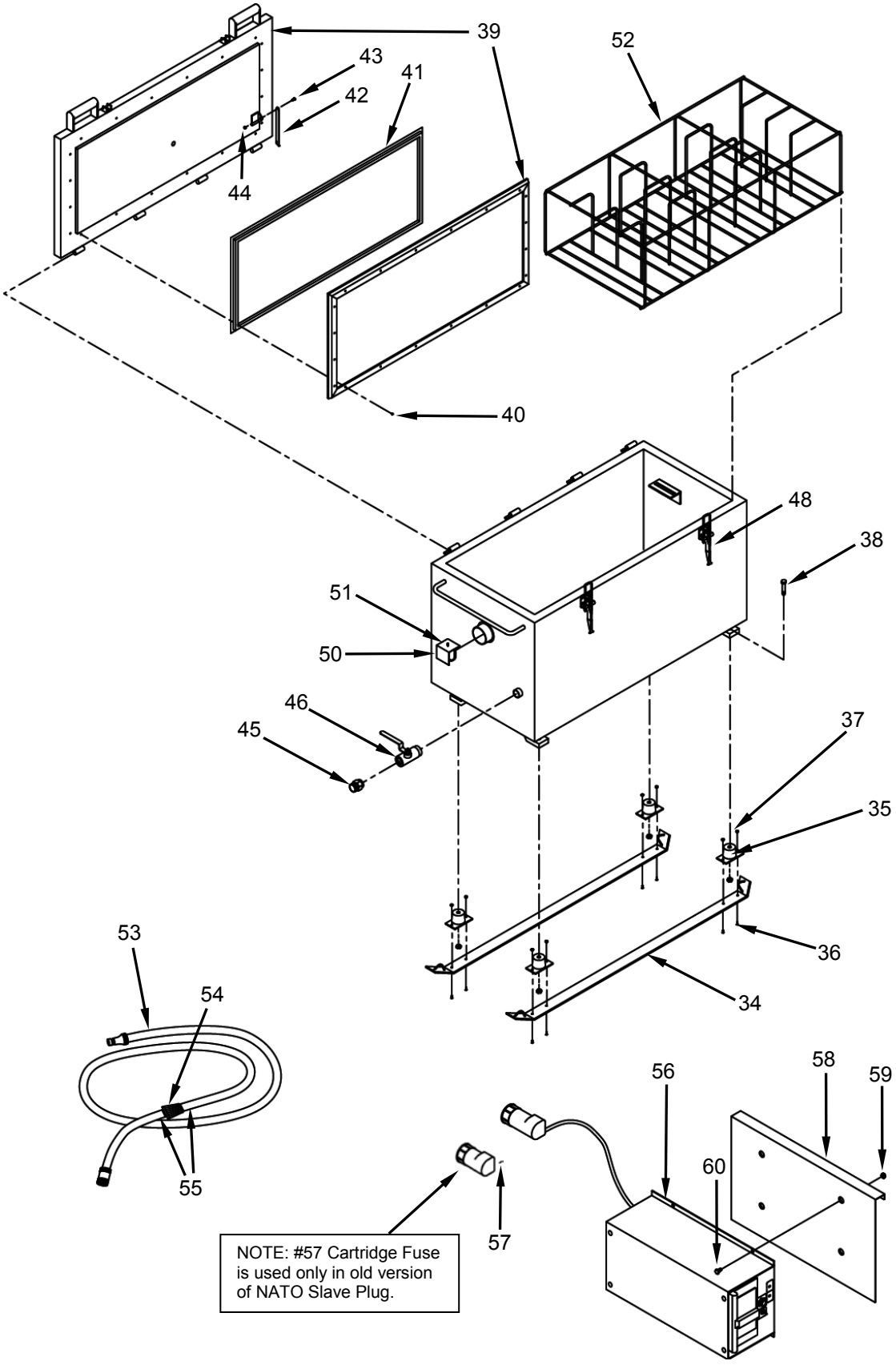


Figure 1. Tray Ration Heater (Sheet 2 of 2).

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 01	
					FIG. 1 TRAY RATION HEATER	
1	PACFF	7310-01-570-9851	04AL0	AKB31008	HEATER,TRAY RATION	1
2	XAFFF		04AL0	TRH AK1008	.TANK ASSEMBLY	1
3	PAFZZ	5930-01-206-2693	73559	2FA5473	. . SWITCH, TOGGLE	1
4	PAFZZ	5999-01-442-7643	01121	800H-FRXTQ1ORD4	. . LIGHT-SWITCH (lighted push-pull switch)	1
5	XDFZZ		04AL0	800T-N169	. . . BULB	1
6	PAFZZ	5925-00-283-6048	77342	W58-XB1A4A-5	. . CIRCUIT BREAKER	1
7	PAFZZ	5935-01-193-5597	96906	MS3470W12-3P	. . CONNECTOR, RECEPTICAL	1
8	PAFZZ	5305-00-063-9610	02734	8914385-6	. . . SCREW, MACHINE	4
9	PAFZZ	5935-01-195-2337	96906	MS3181-12CA	. . COVER, ELECTRICAL CONNECTOR	1
10	PAFZZ	5930-01-492-7272	0JW91	TOS-12C-L1	. . SWITCH, TILT	1
11	XDFZZ		04AL0	128-29-D0000	. . PLATE, TILT SWITCH (tilt sensor plate assembly)	1
12	PAFZZ	5310-01-483-2638	39428	91831A007	. . NUT, SELF-LOCKING HEXAGON (switch to plate; size 6-32)	2
13	PAFZZ	5305-01-463-4929	39428	91831A011	. . NUT, SELF-LOCKING HEXAGON (plate to control box; size 10-24)	2
14	PAFZZ	5940-00-458-0060	01121	1492-F1	. . TERMINAL JUNCTION BLOCK, SECTION A	1
15	PAFZZ	5305-01-463-4929	39428	91831A011	. . . NUT, SELF-LOCKING HEXAGON (for junction terminal, size 10-24)	2
16	PAFZZ	5905-01-443-9038	04AL0	31544	. . RESISTOR, THERMAL	1
17	PAFZZ	5310-01-483-2638	39428	91831A007	. . . NUT, SELF-LOCKING HEXAGON (for thermal resistor; size 6-32)	2
18	PAFZZ	7310-01-493-2287	04AL0	TRH1315	. . PROBE ASSEMBLY, TEFLON (sensor)	1
19	PAFZZ	5340-01-493-1845	04AL0	TRH908A	. . COVER, ACCESS (secondary with gasket)	1
20	PAFZZ	5305-01-493-2488	04AL0	S8-32RS	. . . SCREW,MACHINE (pan head)	4
21	PAFZZ	4010-01-533-4957	39428	90312A210	. . WIRE ROPE ASSEMBLY, SINGLE LEG (lanyard)	2
22	PAFZZ	5315-01-128-6802	39428	92391A054	. . PIN, LOCK (cotter pin)	2
23	PAFZZ	5310-01-483-2638	39428	91831A007	. . NUT, SELF-LOCKING HEXAGON (for lanyard; size 6-32)	2
24	PAFZZ	5340-01-493-2135	04AL0	TRH1201B	. . COVER, ACCESS (primary)	1
25	PAFZZ	5305-01-493-2488	04AL0	S8-32RS	. . . SCREW, MACHINE (pan head)	10
26	PAFZZ	5340-01-533-2105	04AL0	TRH1260-02	. . COVER, ACCESS (burner)	1
27	PAFZZ	5930-01-492-9245	04AL0	16-01	. . SWITCH, LIQUID LEVEL (with bracket)	1
28	PAFZZ	5305-01-463-4929	39428	91831A011	. . . NUT,SELF-LOCKING HEXAGON (for switch,liquid;size:10-24)	4
29	PAFZZ	4720-01-493-1828	04AL0	TRH-FLT-001	. . HOSE ASSEMBLY, NONMETALLIC (internal fuel line assembly)	1
30	PAFZZ	4730-01-493-2207	04AL0	BH2-60Y-282	. . . COUPLING, HALF, QUICK DISCONNECT	1
31	PAFZZ	4330-01-533-8771	04AL0	71936	. . . FILTER ELEMENT	1
32	PAFZZ	4730-01-424-5432	39428	5321K14	. . . CLAMP, HOSE	3

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
33	PAFZZ	7690-01-492-6236	04AL0	L3	. . MARKER, IDENTIFICATION ("boil-auto")	1
34	PAFZZ	7310-01-533-2159	04AL0	TRH914-02	. . SKID ASSEMBLY	2
35	PAFZZ	5342-01-443-9361	04AL0	4C979-R2	. . MOUNT, RESILIENT, WEAPON SYSTEM (with hardware)	4
36	PAFZZ	5305-01-493-2214	39428	92210A583	. . . SCREW, CAP SOCKET HEAD	8
37	PAFZZ	5310-01-493-2243	39428	91839A127	. . . NUT, SELF-LOCKING, CASTELLATED, HEX	8
38	PAFZZ	5306-01-463-2101	25795	4P313	. . . BOLT, MACHINE	4
39	PAFZZ	7310-01-533-2131	04AL0	TRH2020-02	. . LID ASSEMBLY	1
40	PAFZZ	5320-01-614-8913	0Y3H3	10453-02767	. . . RIVET, SOLID (1/8x5/32 aluminum dome head)	22
41	PAFZZ	5330-01-533-2113	39428	TRH1305-02	. . . SEAL, NONMETALLIC SPECIAL SHAPED (gasket)	1
42	PAFZZ	5340-01-493-2184	04AL0	TRH928A	. . . BRACKET, ANGLE (lid stop sub-assembly)	1
43	PAFZZ	5305-01-615-6471	39428	90298A617	. . . . SCREW, SHOULDER (18-8 3/8")	1
44	PAFZZ	5310-01-499-3569	2V507	91831A030	. . . . NUT, SELF-LOCKING, HEXAGON (stainless steel)	1
45	PAFZZ	4730-01-233-8396	39428	73605T92	. . ADAPTER, STRAIGHT, PIPE TO HOSE	1
46	PAFZZ	4820-01-454-2024	39428	47865K24	. . VALVE, BALL	1
47	PAFZZ	6150-01-614-9833	04AL0	128-59-D0000	. . CABLE ASSEMBLY, POWER, ELECTRICAL (supplied with TRH)	1
48	PAFZZ	5340-01-614-8907	1KNW3	06966766	. . FASTNER, CASEMENT (lid latch)	2
49	PAFZZ	7310-01-442-8340	04AL0	B42000-95-0001	. . MULTI-FUEL BURNER (see figure 2 for breakdown)	1
50	PAFZZ	4520-01-493-1836	04AL0	HMV500	. . PIPE, EXHAUST (deflector)	1
51	PAFZZ	5305-01-493-2489	04AL0	S10-32RC	. . . SCREW, MACHINE (thumbscrew)	1
52	PAFZZ	7310-01-533-4186	04AL0	TRH931-24	. . WIRE RACK, TRAY PACK	1
53	PAFZZ	4720-01-493-1830	04AL0	TRH-FLA-001	. HOSE ASSEMBLY NONMETALLIC (external fuel hose supplied with TRH)	1
54	PAFZZ	4330-01-533-8771	04AL0	71936	. . FILTER ELEMENT	1
55	PAFZZ	4730-01-484-5482	39428	5321K14	. . CLAMP, HOSE	2
56	PACFF	6130-01-493-1792	04AL0	MIL-24/300NQ-005	INVERTER, POWER STATIC (with NATO slave plug)	1
57	PAFZZ	5920-00-012-0151	83299	658201C	. FUSE, CARTRIDGE (if necessary)	1
58	PAFZZ	5340-01-616-0379	04AL0	HMV316	. BRACKET, MOUNTING (for power inverter)	1
59	PAFZZ	5310-01-416-1851	39428	91831A029	. NUT, SELF-LOCKING HEXAGON	4
60	XDFZZ		04AL0	70001	. BOLT, THREADED (1/4x20x1/2 in.)	4

END OF FIGURE

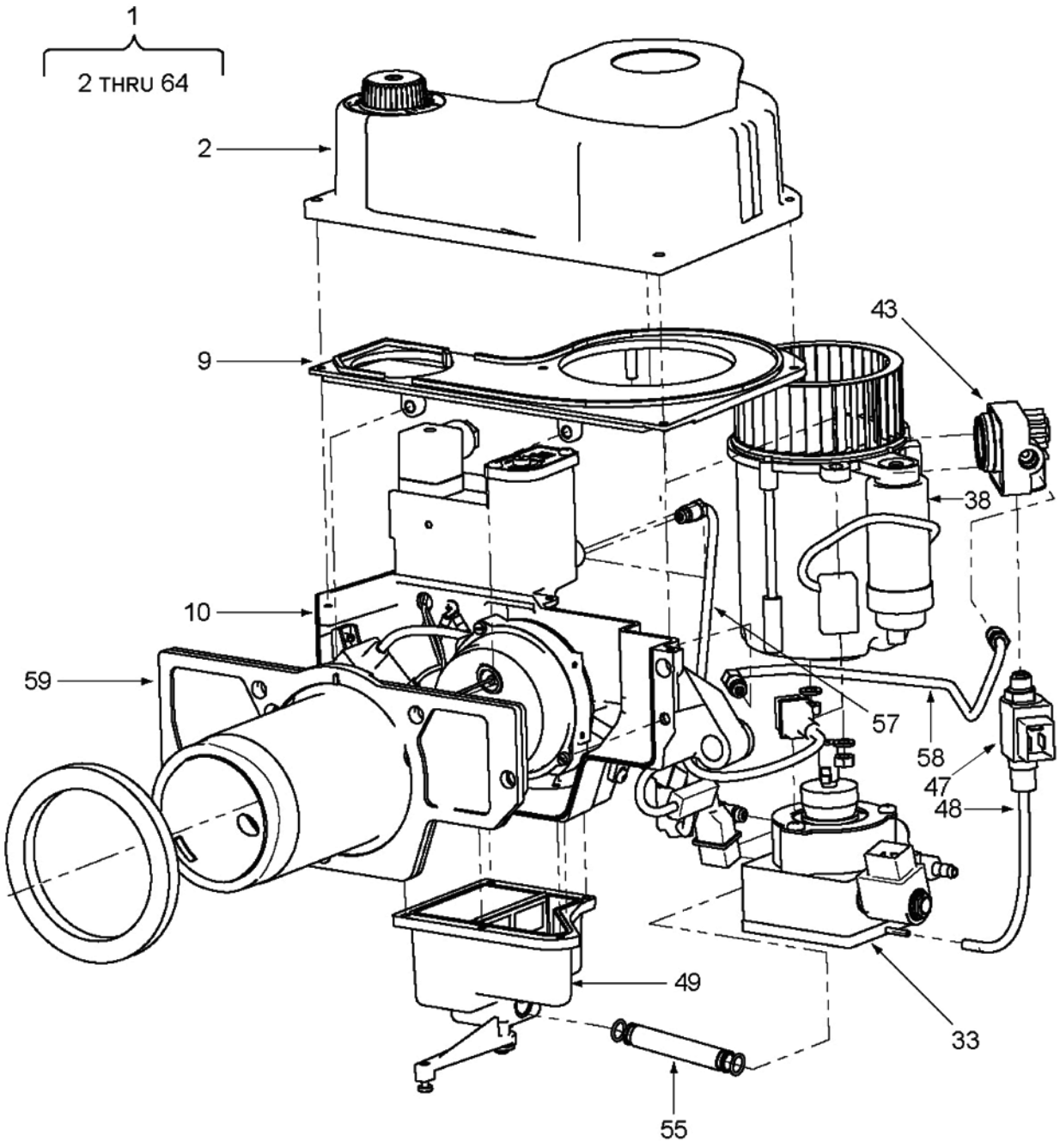


Figure 2. Burner, Multi-Fuel. (Sheet 1 of 6)

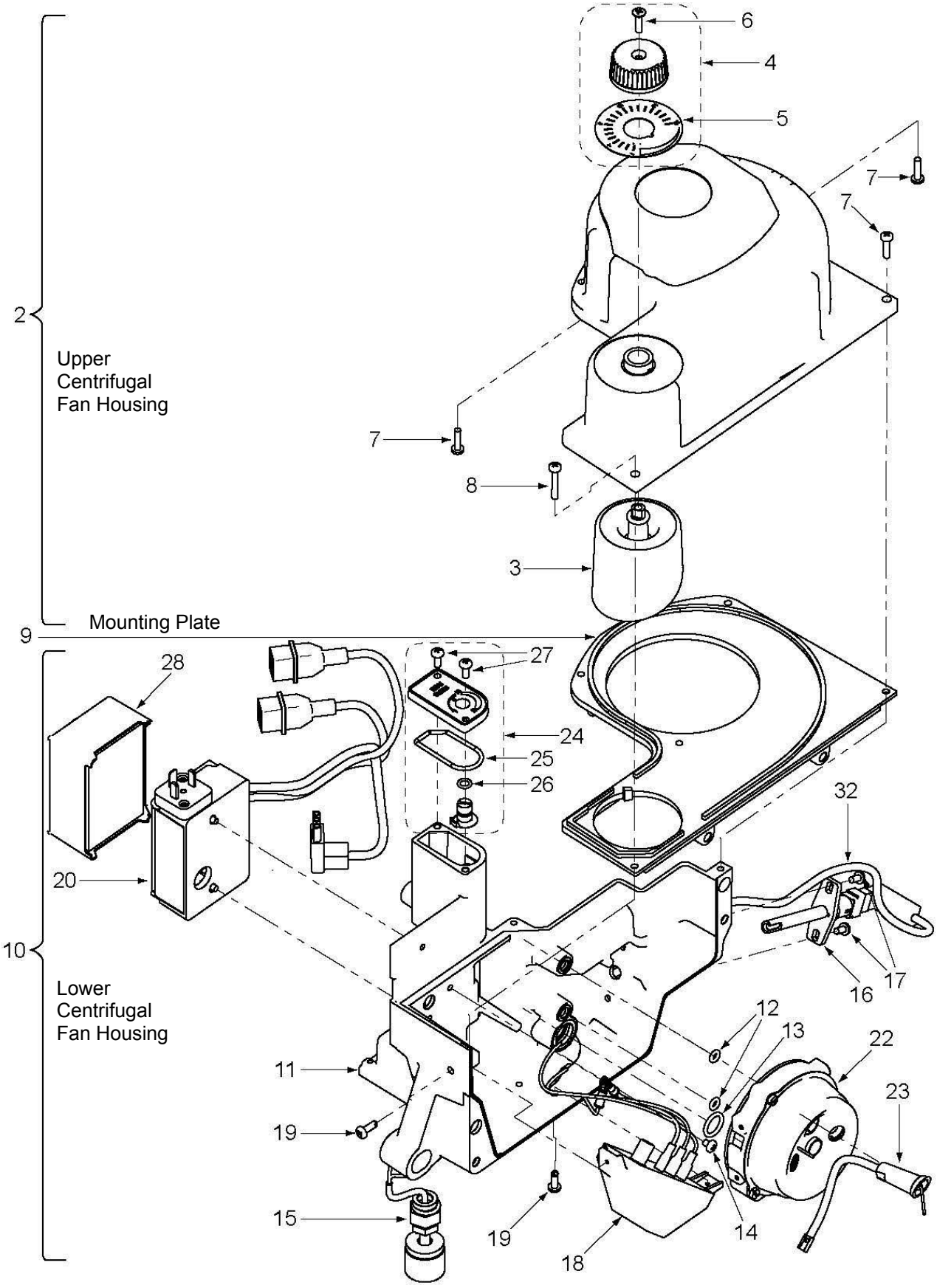


Figure 2. Burner, Multi-Fuel. (Sheet 2 of 6)

Burner, Multi-Fuel Burner, Multi-Fuel

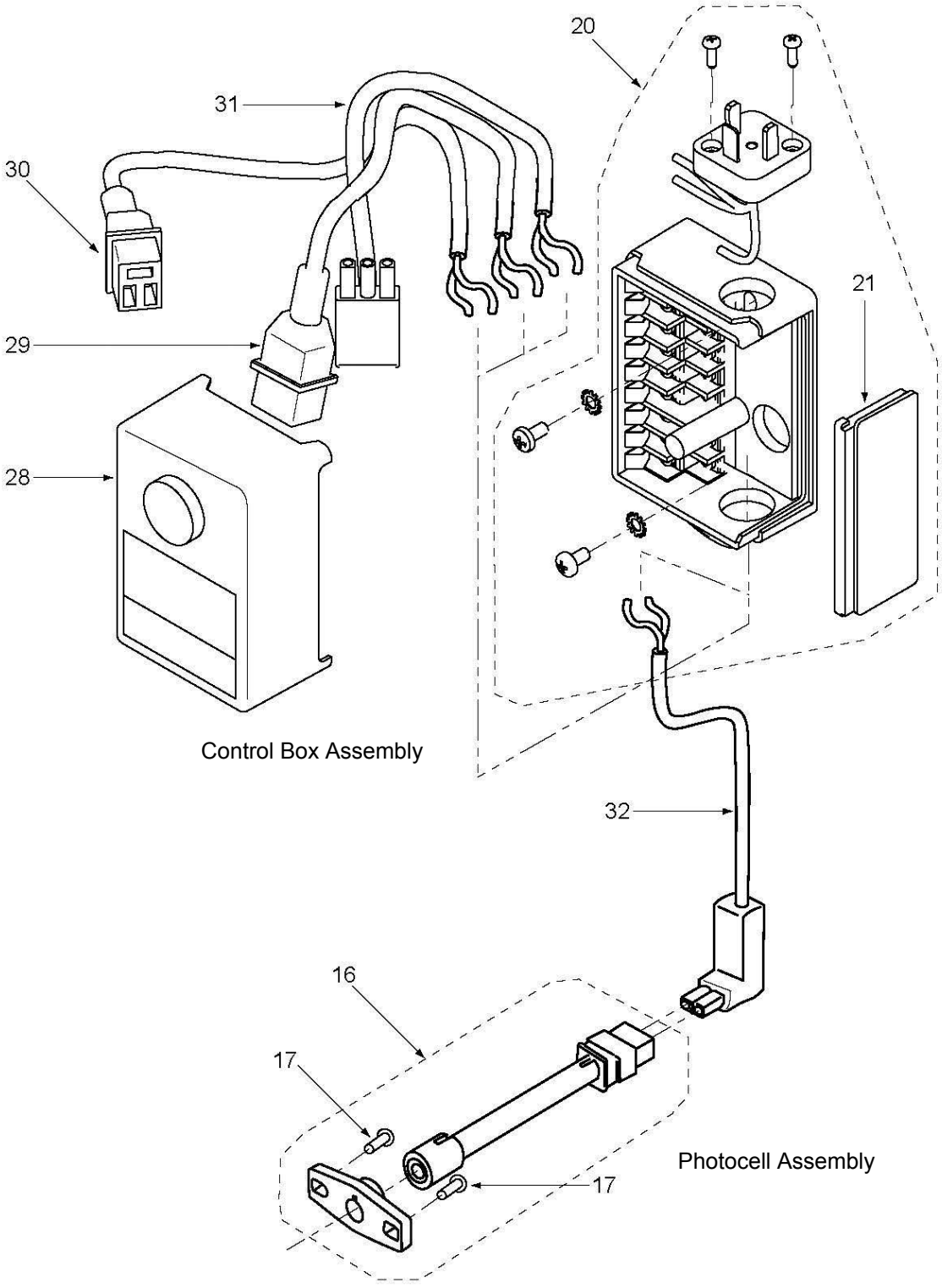


Figure 2. Burner, Multi-Fuel. (Sheet 3 of 6)

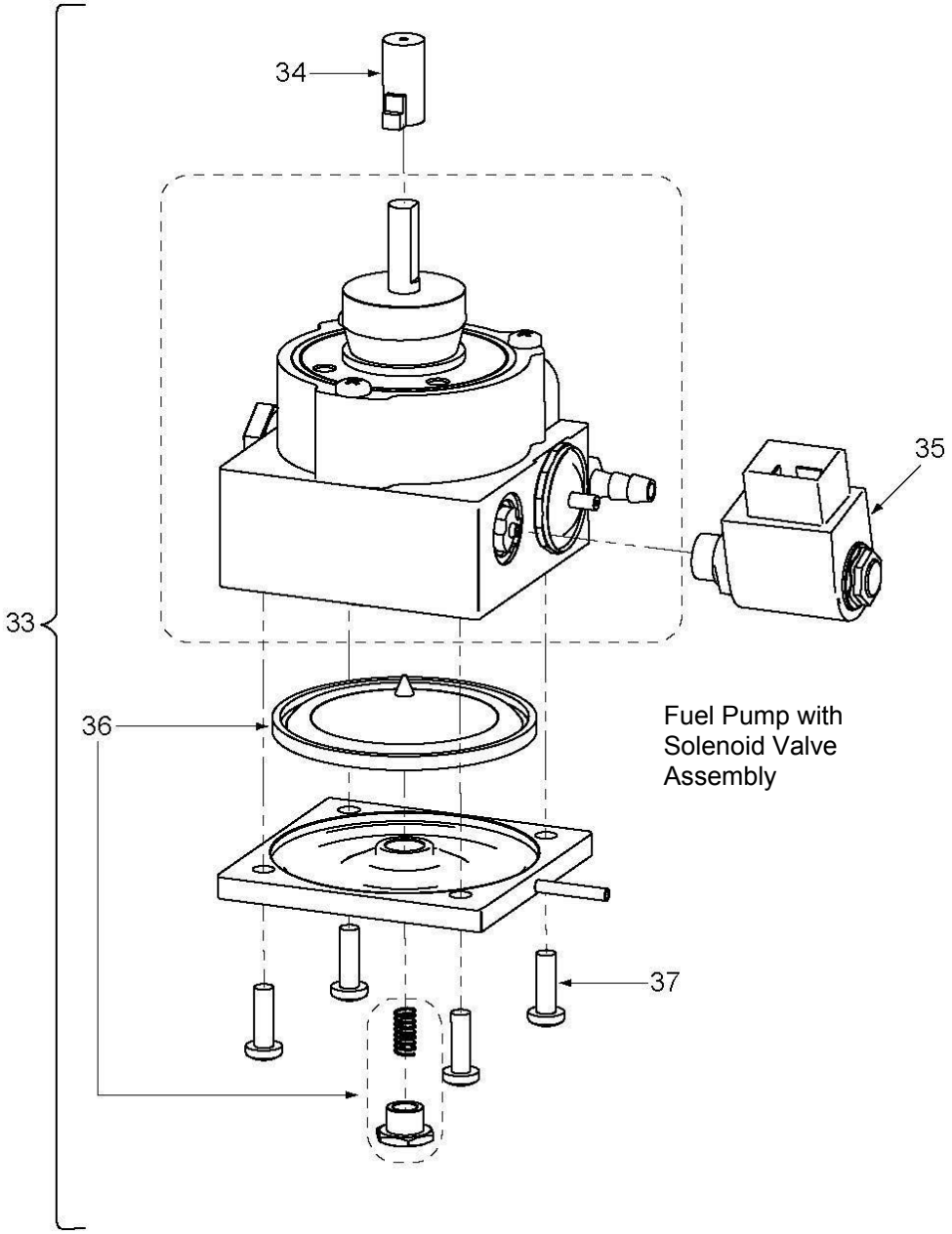


Figure 2. Burner, Multi-Fuel. (Sheet 4 of 6)

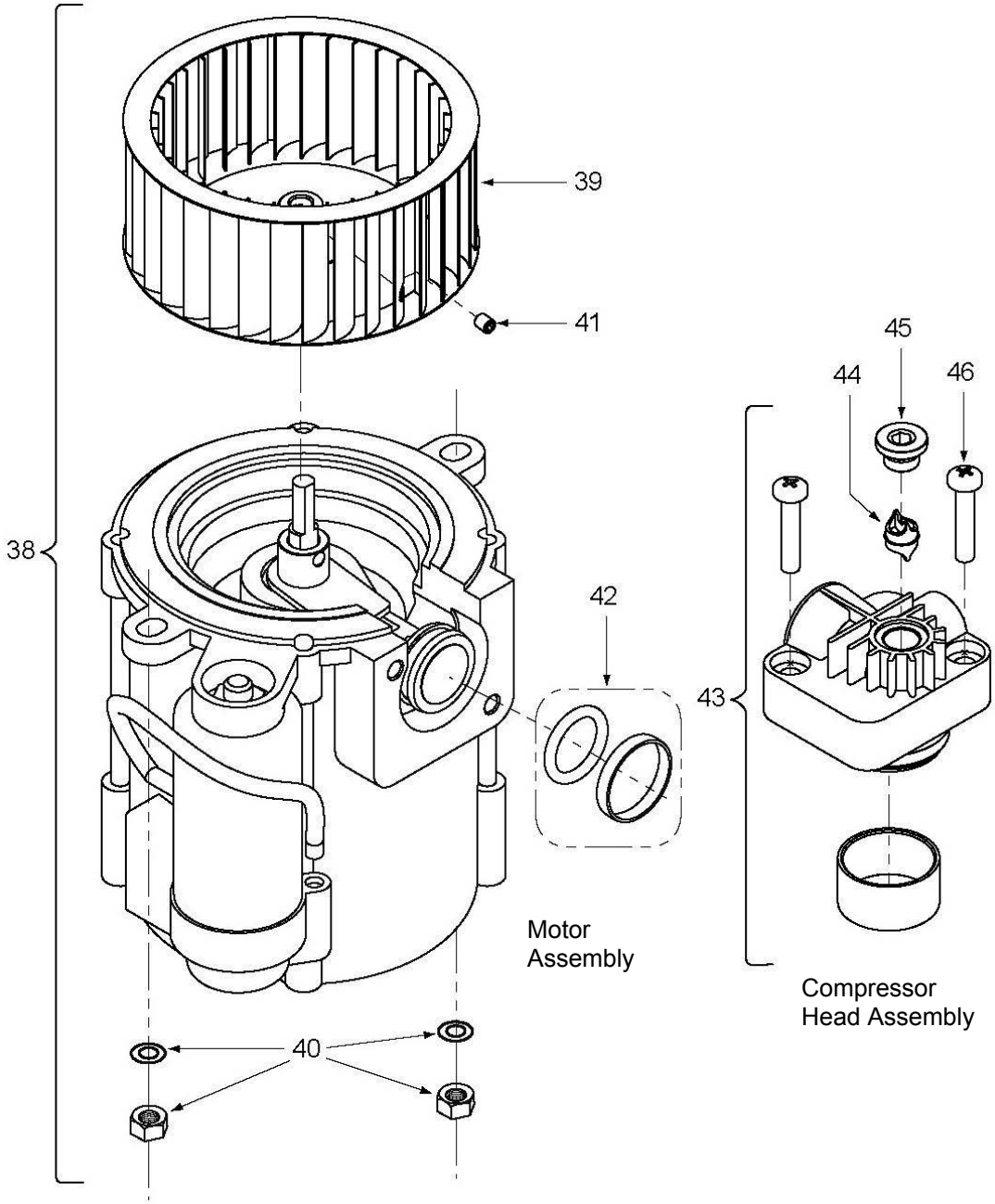


Figure 2. Burner, Multi-Fuel. (Sheet 5 of 6)

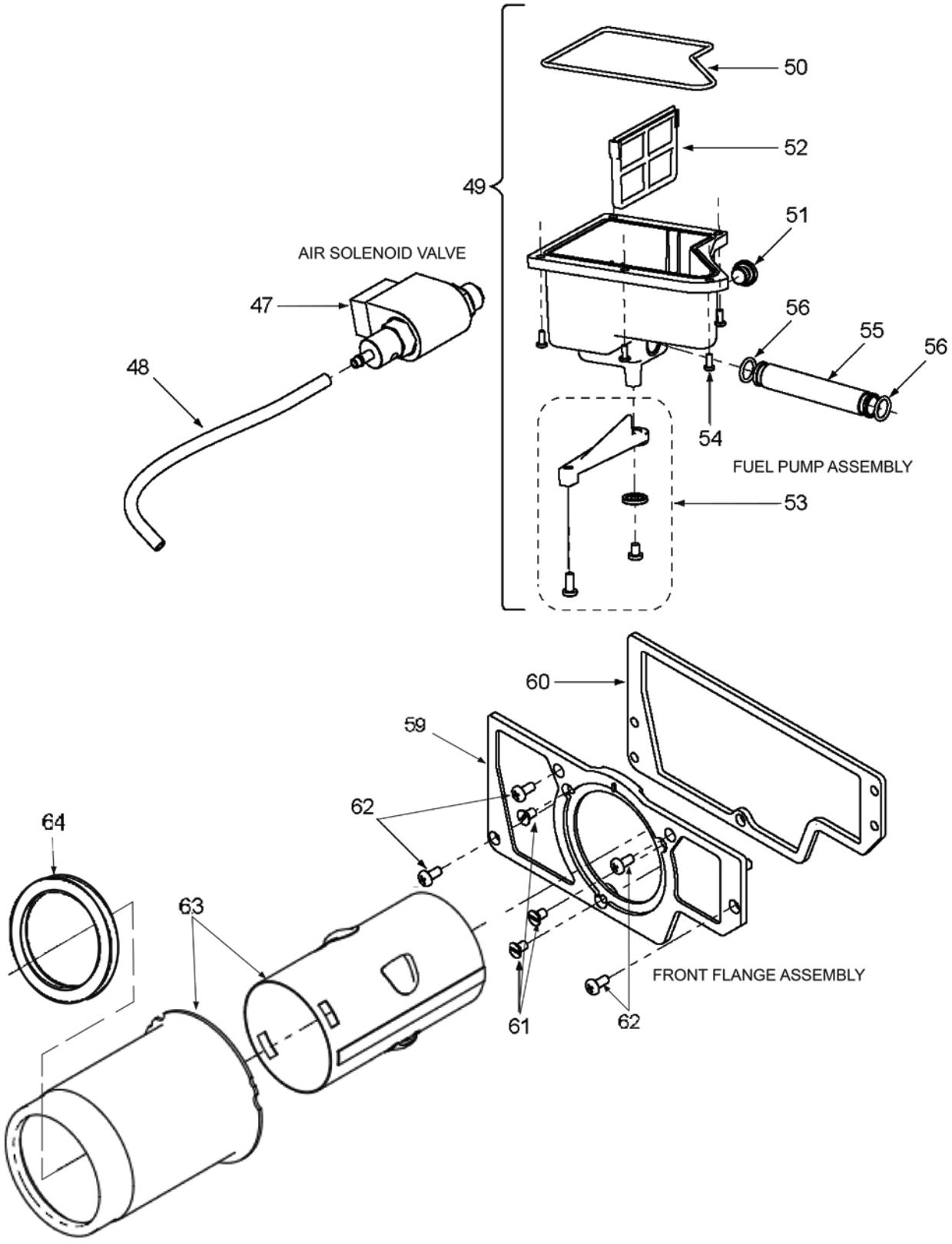


Figure 2. Burner, Multi-Fuel. (Sheet 6 of 6)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0113	
					FIG. 2 BURNER, MULTI-FUEL	
1	PAFFF	7310-01-442-8340	04AL0	B42000-95-0001	MULTI-FUEL BURNER	1
2	PAFZZ	4140-01-533-2038	04AL0	B42005-98-0020	. HOUSING, CENTIFUGAL FAN (upper fan housing assembly)	1
3	PAFZZ	7310-01-493-1801	04AL0	B42000-95-0021	. CONTROL, BLOWER AIR (scroll assembly, combustion air)	1
4	PAFZZ	5355-01-615-1664	04AL0	120-01-0008	. . KNOB (air regulating, includes scale and screw)	1
5	XAFZZ		04AL0	120-01-0010	. . . SCALE, AIR VOLUME PRINTED ALUMINUM	1
6	XAFZZ	5305-01-546-1119	39428	90258A221	. . . SCREW MACHINE (oval head screw)	1
7	XDFZZ		04AL0	SC M4X16PAN	. . SCREW, PAN HEAD	3
8	XDFZZ		04AL0	SC M4X25PAN	. . SCREW, PAN HEAD	1
9	PAFZZ	5340-01-492-6739	04AL0	B42000-95-0022	PLATE MOUNTING (intermediate plate assembly)	1
10	PAFFF	4140-01-533-2053	04AL0	B42000-98-0023	. HOUSING, CENTRIFUGAL FAN (lower fan housing assembly)	1
11	XAFZZ		04AL0	120-03-0017.	. . BODY, LFH DIE CAST ASSEMBLY	1
12	PAFZZ	5331-01-533-4280	04AL0	9263K212	. O-RING (air & fuel)	2
13	PAFZZ	5331-01-533-4279	04AL0	9263K238	. O-RING (drain)	1
14	XDFZZ	5305-12-142-5544	39428	92005A218	. . SCREW, MACHINE (TRANSFORMER GROUND) (pan head crosstip machine screw)	2
15	PAFZZ	5930-01-492-9140		B42000-95-0037	. SWITCH, LIQUID LEVEL	1
16	PAFZZ	5961-01-493-1761	04AL0	B42005-95-0018	. . SEMICONDUCTOR DEVICE, PHOTO (photocell assembly)	1
17	PAFZZ	5305-12-142-5544	39428	92005A218	. . . SCREW, MACHINE (pan head crosstip machine screw)	2
18	PAFZZ	7310-01-493-1726	04AL0	B42000-95-0029	. TRANSFORMER, IGNITION	1
19	XDFZZ		04AL0	CR-PHSMS8X.375	. . SCREW, PHSM, TRANSFORMER	2
20	PAFZZ	7310-01-493-1765	04AL0	B42000-95-0016	. BASE, CONTROL BOX	1
21	PAFZZ	5340-01-533-4450	04AL0	B42000-95-0016S	. . COVER, ACCESS (to control box)	1
22	PAFZZ	7310-01-492-9267	04AL0	B42000-95-0027	. CHAMBER, ATOMIZING	1
23	PAFZZ	4520-01-492-6662	04AL0	B42005-95-0028	. . IGNITER, SPARK, FUEL (ignition electrode)	1
24	PAFZZ	4530-01-533-2037	04AL0	B42005-04-0024	. . VALVE, REGULATING, FUEL OIL (flow control module cover and cam assembly)	1
25	PAFZZ	5331-01-533-4494	04AL0	B42005-04-0024G	. . . O-RING (flat cam cover seal)	1
26	PAFZZ	5331-01-581-8266	04AL0	9263K135	. . . O-RING (firing rate regulator cam)	1
27	PAFZZ	5305-01-484-0936	04AL0	92000A220	. . . SCREW, MACHINE (pan head)	2
28	PAFZZ	4540-01-493-1729	04AL0	B42000-95-0017	. . CONTROL, FLAME SAFEGUARD (primary control unit)	1
29	PAFZZ	6150-01-492-8211	04AL0	B42000-95-0014	. CABLE, ASSEMBLY, POWER, ELECTRICAL (fuel)	1

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
30	PAFZZ	6150-01-492-8211	04AL0	B42000-95-0014	. CABLE, ASSEMBLY, POWER, ELECTRICAL (air)	1
31	PAFZZ	6150-01-533-4483	04AL0	B42005-98-002C	.CABLE, ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL (motor aeg)	1
32	PAFZZ	6150-01-533-4465	04AL0	B42005-95-0018C	. CABLE, ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL (photocell cable)	1
33	PAFZZ	2910-01-442-2875	04AL0	B42000-95-0010	. PUMP, FUEL ELECTRICAL (fuel pump with solenoid valve assembly)	1
34	PAFZZ	3010-01-492-8203	04AL0	B42000-95-0011	. . COUPLING, SHAFT, RIGID	1
35	PAFZZ	4810-01-533-4207	04AL0	B42000-04-0013	. . VALVE, SOLENOID (fuel)	1
36	PAFZZ	4320-01-533-4444	04AL0	B42005-95-0010M	. . PUMP UNIT, RECIPROCATING (MEMBRANE)	1
37	XDFZZ		39428	92005A318	. . SCREW, BASE PLATE	4
38	PAFZZ	6105-01-442-6342	04AL0	B42000-95-0002	. MOTOR, ALTERNATING CURRENT	1
39	PAFZZ	4140-01-492-6709	04AL0	B42000-95-0038	. . IMPELLER, FAN CENTRIFUGAL	1
40	PAFZZ	5310-01-493-2285	04AL0	B42000-95-0045	. . NUT, MOTOR MOUNT (and washer)	2
41	PAFZZ	5305-01-615-4168	04AL0	91390A111	. . SCREW, SOCKET HEADSET	1
42	PAFZZ	4310-01-492-8182	04AL0	B42000-95-0004	. . PARTS KIT, PISTON ASSEMBLY, COMPRESSOR (piston ring & o-ring)	1
43	PAFZZ	7310-01-539-3617	04AL0	B42000-95-0003	. COMPRESSOR HEAD ASSEMBLY	1
44	PAFZZ	4310-01-492-8190	39428	42000-95-0005	. . FILTER, ELEMENT INTAKE AIR CLEANER (compressor air filter)	1
45	PAFZZ	5365-01-492-9147	04AL0	42000-95-0044	. . PLUG, MACHINE THREAD	1
46	XDFZZ		04AL0	CR-PHMS M5X0.8X25	. . SCREW, PANHEAD MACHINE	2
47	PAFZZ	4810-01-533-2068	04AL0	B42005-04-0006	. VALVE, SOLENIOD (air solenoid valve body and coil assembly)	1
48	PAFZZ	4720-01-533-4407	04AL0	AAA00007	. . TUBING, NONMETALLIC (primer port tubing)	1
49	PAFZZ	7310-01-533-2095	04AL0	B42005-04-0025	.LARGE FUEL SUMP (fuel sump assembly)	1
50	PAFZZ	5330-01-539-3609	04AL0	B42000-04-0042	. . GASKET (o-ring, sump)	1
51	PAFZZ	5365-01-492-9147	04AL0	B42000-04-0044	. . PLUG, MACHINE THREAD	1
52	PAFZZ	4730-01-615-1910	04AL0	120-04-0029	. . STRAINER ELEMENT, SEDIMENT	1
53	PAFZZ	5340-01-614-8865	04AL0	120-04-0031	. . HANDLE,MANUAL control (stabilizing foot, sump)	1
54	XDFZZ		04AL0	CRPHMSM4 X0.7X16..	SCREW, MACHINE SUMP	5
55	PAFZZ	4710-01-492-9150	04AL0	B42000-95-0026	. TUBE, METALLIC (crossover tube)	1
56	PAFZZ	5331-01-614-8927	04AL0	OR.38 X.50VITON	. . O-RING (for crossover tube)	2
57	PAFZZ	4710-01-492-8200	04AL0	B42000-95-0007	. TUBE ASSEMBLY, METAL (metal fuel line)	1
58	PAFZZ	4710-01-492-9160	04AL0	B42000-95-0009	. TUBE ASSEMBLY, METAL (metal air line)	1
59	PAFZZ	5340-01-492-6700	04AL0	B42000-95-0031	. PLATE MOUNTING (front flange assembly)	1
60	PAFZZ	5330-01-614-8904	04AL0	B42000-95-0031G	. . GASKET (front flange)	1

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
61	XDFZZ		04AL0	SL-FHMS M6X1.0X1	. . SCREW, FH MACHINE	3
62	PAFZZ	5305-01-493-2282	04AL0	B42000-95-0040	. . SCREW, FRONT PLATE	4
63	PAFZZ	7310-01-492-9271	04AL0	B42000-95-0035	. . BURNER, TUBE ASSY	1
64	PAFZZ	5330-01-533-4274	04AL0	8623K144G	. . . GASKET (hi-temp silicone)	1

END OF FIGURE

OPERATOR AND FIELD MAINTENANCE

GROUP 02 COOKING APPLIANCES

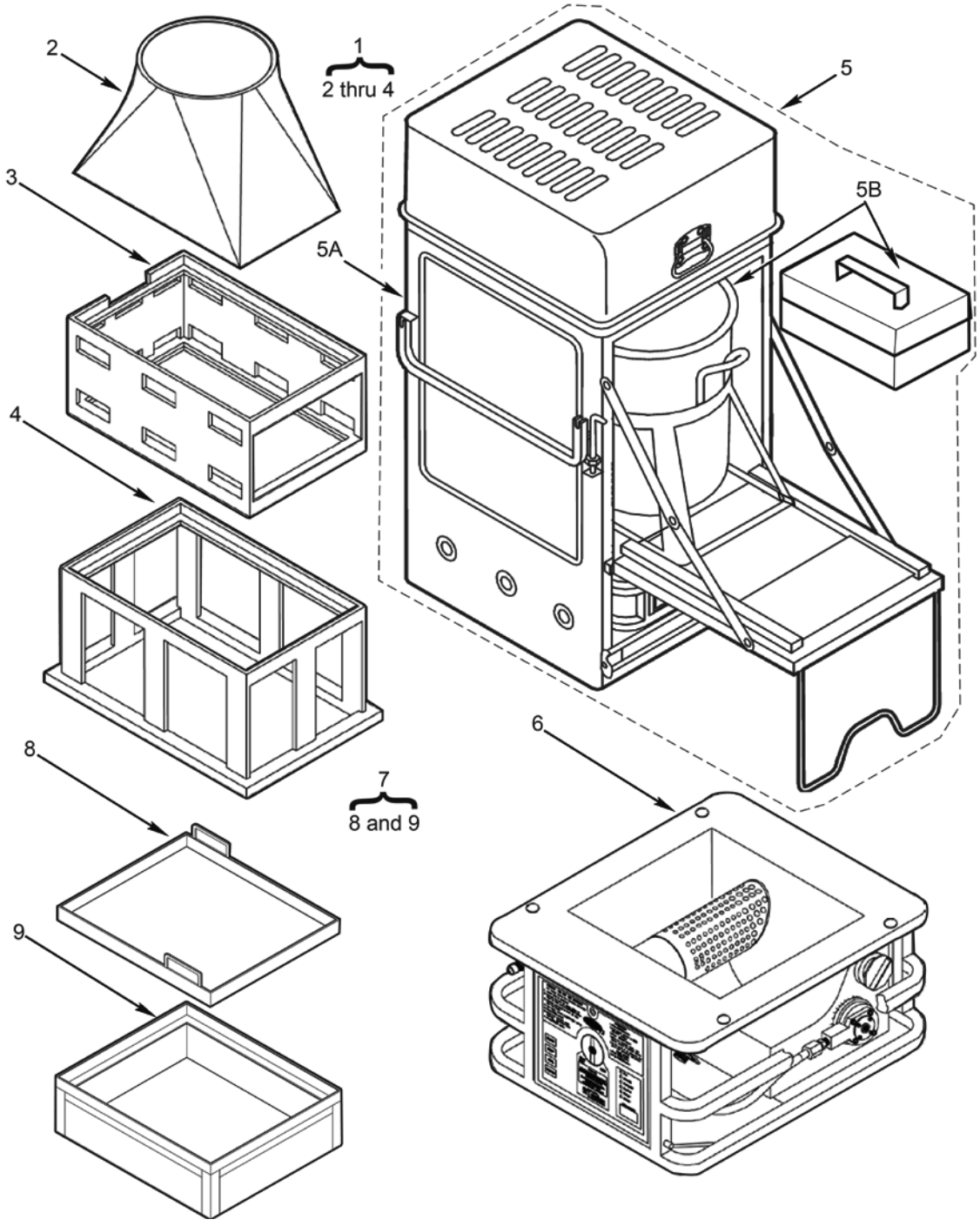


Figure 3. Cooking Appliances.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 02	
					FIG. 3 COOKING APPLIANCES	
1	PACFF	7330-01-248-9964	81337	5-13-3991	CRADLE ASSEMBLY,COOKING POT	1
2	PAFZZ	7330-01-249-1959	81337	5-13-3886	. CRADLE, COOKING POT	1
3	PAFZZ	7360-01-250-3649	81337	5-13-3875	. RACK, BURNER	1
4	PAFZZ	7360-01-250-3652	81337	5-13-3868	. RACK, BASE	1
5	PACFF	7360-01-479-0312	81337	5-11-2090-2	M59A FIELD RANGE WITH OUTFIT	1
5	PACFF	7360-01-475-0063	81337	5-11-2090	. M59A FIELD RANGE	1
5	PACFF	7360-01-479-0344	81337	5-11-2076	. M59A FIELD RANGE OUTFIT	1
6	PACFF	7310-01-507-9310	81349	PD MBU-001	MODERN BURNER UNIT V3	1
7	PACFF	7310-01-391-3065	81337	5-13-5625	GRIDDLE, ASSEMBLY, FIELD	1
8	XAFZZ		81337	5-13-5626-1	. GRIDDLE	1
9	XAFZZ		81337	5-13-5627-1	. BASE, GRIDDLE	1
					END OF FIGURE	

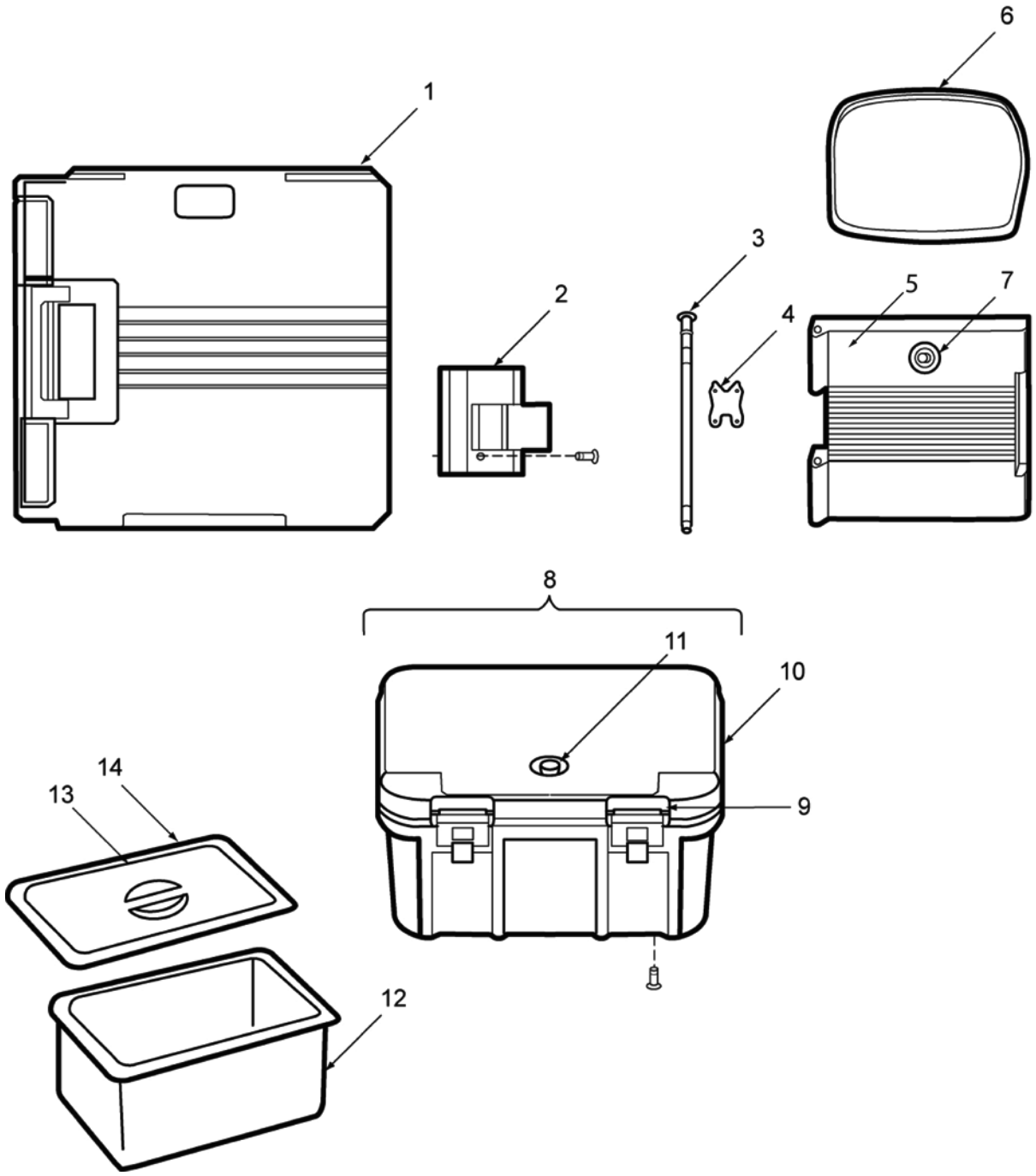


Figure 4. Ancillary Equipment (Sheet 1 of 2).

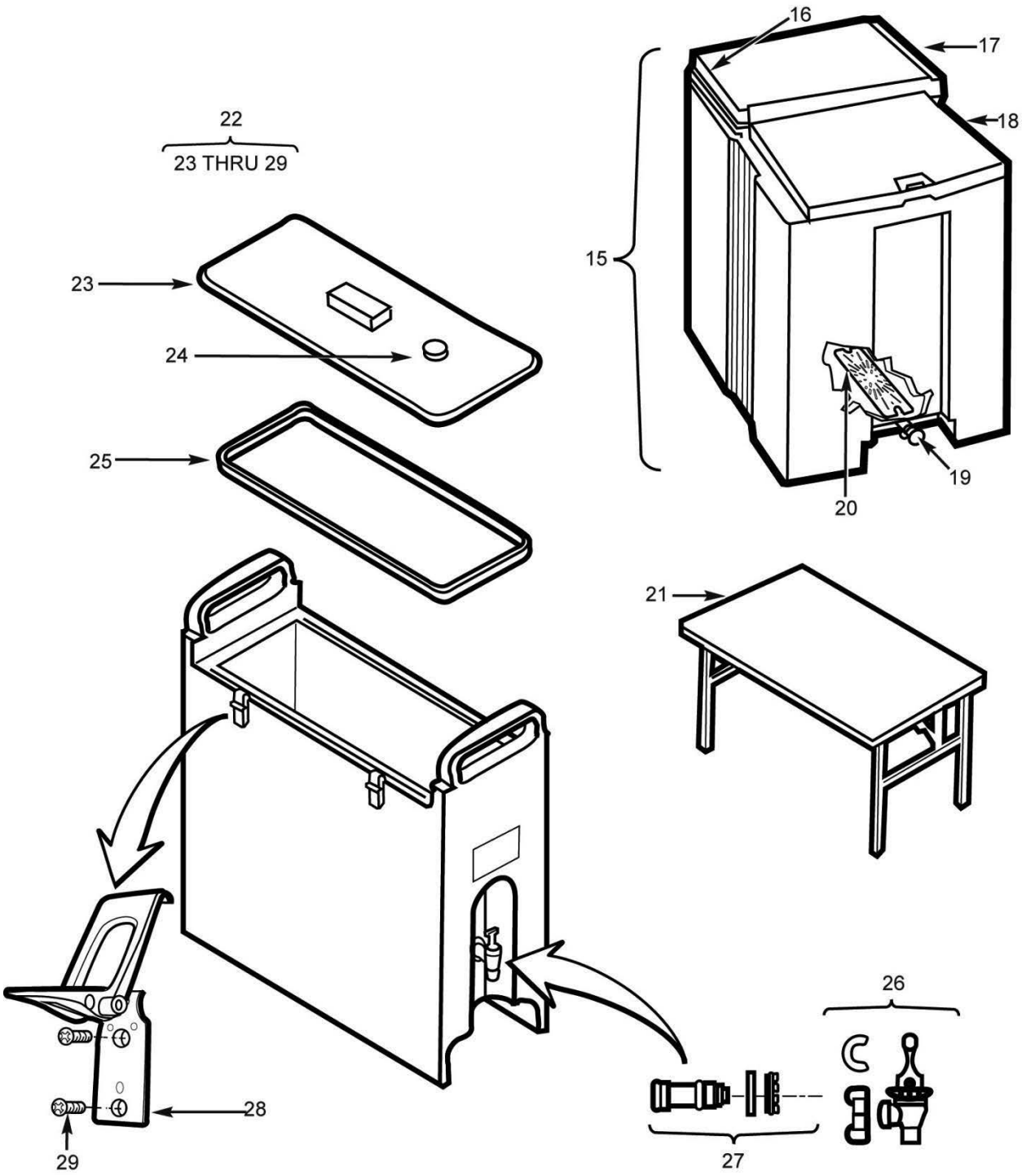


Figure 4. Ancillary Equipment (Sheet 2 of 2).

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 03	
					FIG. 4 ANCILLARY EQUIPMENT	
1	PACFF	7330-01-582-6606	21669	UPC400-403	FOOD CONTAINER, INSULATED (green)	2
1	PACFF	7330-01-582-6605	21669	UPC400-157	FOOD CONTAINER, INSULATED (tan)	2
2	PAFZZ	7310-01-520-6173	21669	60135	. LATCH WITH SCREWS	1
3	XAFZZ		21669	42132	. HINGE PIN, NYLON	2
4	XAFZZ		21669	42133	. LOCK CLIP, HINGE PIN	2
5	PAFZZ	5340-01-520-6175	21669	7335-403	. DOOR (green)	1
5	PAFZZ		21669	7335-157	. DOOR (tan)	1
6	PAFZZ	5330-01-520-6178	21669	12119	. . GASKET	1
7	PAFZZ	7320-01-213-6160	21669	14200	. . CAP, VENT, DISPENSER	1
8	PACZZ	7360-01-419-8500	21669	UPCS160PKG-403	FOOD TRANSPORTER, INSULATED (green)	5
8	PACZZ	7360-01-419-6261	21669	UPCS160PKG-157	FOOD TRANSPORTER, INSULATED (tan)	5
9	XAFZZ		21669	60423	. LATCH WITH SCREWS	4
10	PAFZZ	7310-01-520-7950	21669	7615	. COVER, INSULATED (green)	1
10	PAFZZ		21669	7615-157	COVER, INSULATED (tan)	1
11	PBFZZ	7320-01-213-6160	21669	14200	. . CAP, VENT, DISPENSER	1
12	PBFZZ	7360-01-465-4561	21669	43024	. FOOD TRANSPORTER, PAN	3
13	PBFZZ	7360-01-463-9027	21669	43025	. FOOD TRANSPORTER, COVER	3
14	PBFZZ	7360-01-456-9114	21669	43026	. . FOOD TRANSPORTER, PAN COVER GASKET	3
15	PACFF	4110-01-452-7317	81337	AA52218-II2	CHEST, ICE STORAGE (green, no wheels)	1
15	PACFF	4110-01-452-7315	81337	AA52218-II2	CHEST, ICE STORAGE (tan, no wheels)	1
16	XAFZZ		21669	45238	. THUMBSCREW	4
17	XAFZZ		21669	7634-403	. LID, STATIONARY (green)	1
17	XAFZZ		21669	7634-157	. LID, STATIONARY (tan)	1
18	XAFZZ		21669	7635-403	. LID, SLIDE (green)	1
18	XAFZZ		21669	7635-157	. LID, SLIDE (tan)	1
19	XAFZZ		21669	64005	. DRAIN PLUG ASSY	1
20	XAFZZ		21669	IC175D	. DRAIN SHELF	1
21	PAFZZ	7105-01-500-0012	81337	A-A-59102-1-E-2	TABLE, FOLDING LEGS	3
22	PAFFF	7310-01-245-6937	21669	500LCD-G	DISPENSER, LIQUID, INSULATED (green)	6
22	PAFFF	7320-01-093-7371	81349	MIL-D-43916	DISPENSER, LIQUID, INSULATED (tan)	6
23	PBFZZ	7320-01-255-8174	21669	6322-6-G	. LID ASSEMBLY, LIQUID DISPENSER, (green)	1
23	PBFZZ	7320-01-223-9158	21669	6322-0	. LID ASSEMBLY, LIQUID DISPENSER. (tan)	1
24	PBFZZ	7320-01-213-6160	21669	14200	. . CAP, VENT, DISPENSER	1
25	PBFZZ	5330-01-255-2588	21669	12101	. . GASKET	1
26	PBFZZ	4510-01-522-2894	21669	60267	. FAUCET ASSEMBLY, PORTABLE LIQUID	1

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
27	PBFZZ	7330-01-250-7730	21669	64003	. SPOUT ASSEMBLY, DISPENSER	1
28	XDFZZ		21669	60263	. CATCH, FLUSH	4
29	PBFZZ	5305-00-497-7401	21669	MS51861-25C	. SCREW, TAPPING	8

END OF FIGURE

OPERATOR AND FIELD MAINTENANCE

GROUP 04 HARDWARE AND SHELVING

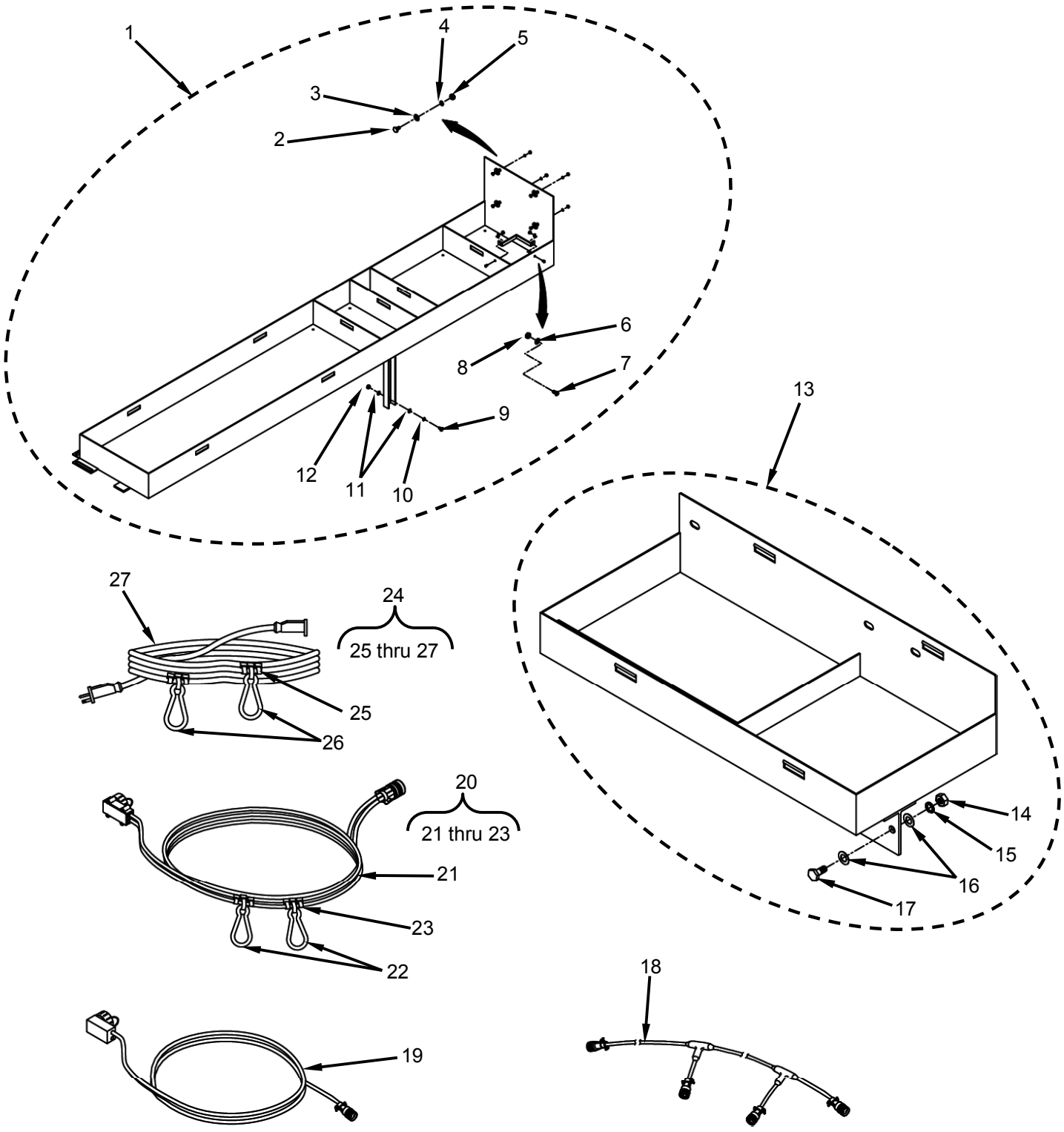


Figure 5. Hardware and Shelving.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 04	
					FIG. 5. HARDWARE AND SHELVING	
1	PACZZ	5340-01-572-6182	81337	5-13-7647	BOX, ACCESSORIES STOWAGE (LTT bracket driver's side)	1
2	PAFZZ	5305-01-134-0726	39428	92240A540	. SCREW, CAP, HEXAGON HEAD (1/4-20 X 3/4 IN)	4
3	PAFZZ	5310-01-554-2341	07BY4	96659A106	. WASHER, FLAT (1/4 IN)	4
4	PAFZZ	5310-01-229-6260	39428	92146A029	. WASHER, LOCK (1/4 IN)	4
5	PAFZZ	5310-01-416-1851	39428	91831A029	. NUT, SELF-LOCKING, HEXAGON (1/4-20)	4
6	PAFZZ	5310-01-572-4929	39428	96659A104	. WASHER, FLAT, #10	2
7	PAFZZ	5305-01-529-7722	39428	91772A830	. SCREW, MACHINE (10-32 X 5/8 IN)	2
8	PAFZZ	4730-01-345-5497	39428	91831A411	. LOCKNUT, TUBE FITTING (self-locking, hexagon 10-32)	2
9	PAFZZ	5305-01-237-6733	39428	92240A626	. SCREW, CAP, HEXAGON HEAD (3/8-16 X 1-1/4 IN)	1
10	PAFZZ	5310-01-569-5319	39428	91007A641	. WASHER, LOCK, 3/8 IN	1
11	PAFZZ	5310-01-547-5388	39428	96659A108	. WASHER, FLAT, 3/8 IN	2
12	PACFF	5310-01-475-9244	39428	91831A127	. NUT, SELF-LOCKING, HEXAGON (3/8 – 16)	1
13	PAFZZ	2540-01-614-9082	81337	5-13-7648	BOX, ACCESSORIES STOWAGE, (LTT bracket passenger side)	1
14	PAFZZ	5310-01-475-9244	39428	91831A127	. NUT, SELF-LOCKING, HEXAGON (3/8 – 16)	5
15	PAFZZ	5310-01-569-5319	39428	91007A641	. WASHER, LOCK (3/8 IN)	5
16	PAFZZ	5310-01-547-5388	39428	96659A108	. WASHER, FLAT (3/8 IN)	10
17	PAFZZ	5305-01-237-6733	39428	92240A626	. SCREW, CAP, HEXAGON HEAD, (3/8-16 X 1-1/4 IN)	5
18	PAFZZ	7310-01-455-1017	3AD06	MS0104	HARNESS BRANCH, MBU	1
19	PAFZZ	7310-01-454-1241	L4703	MS0250	ELECTRICAL ADAPTER, MBU	1
20	MFFZZ		81337	5-13-7728	NATO ADAPTER ASSEMBIES (with carabiner)	1
21	PBFZZ	6150-01-583-0627	3P0G5	ABACH0596-20	. CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL (20 foot)	1
22	PAFZZ	5340-01-614-4736	39428	3079T33	. SNAP HOOK (carabiner)	2
23	PBFZZ	5975-00-985-6630	81343	AS3367-3-0	. STRAP, TIEDOWN, ELECTRICAL	6
24	MFFZZ		81337	5-13-7644	CABLE, EXTENSION CORD ASSEMBLY (with carabiner) (50 foot)	1
25	PBFZZ	5975-00-985-6630	81343	AS3367-3-0	. STRAP, TIEDOWN, ELECTRICAL	6
26	PAFZZ	5340-01-614-4736	39428	3079T33	. SNAP HOOK (carabiner)	2
27	PBFZZ	7310-01-454-1281	MS040	L4703	. EXTENSION CORD, MBU (50 foot)	1
					END OF FIGURE	

OPERATOR AND FIELD MAINTENANCE

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM
5920-00-012-0151	1	57
5305-00-063-9610	1	8
5925-00-283-6048	1	6
5940-00-458-0060	1	14
5975-00-985-6630	5	23
	5	25
5315-01-128-6802	1	22
5305-01-134-0726	5	2
5935-01-193-5597	1	7
5935-01-195-2337	1	9
5930-01-206-2693	1	3
7320-01-213-6160	4	7
	4	11
	4	25
7320-01-223-9158	4	24
5310-01-229-6260	5	4
4730-01-233-8396	1	45
5305-01-237-6733	5	9
	5	17
7310-01-245-6937	4	23
7310-01-093-7371	4	23
7330-01-248-9964	3	1
7330-01-249-1959	3	2
7360-01-250-3649	3	3
7360-01-250-3652	3	4
7330-01-250-7730	4	28
5330-01-255-2588	4	26
7320-01-255-8174	4	24
4730-01-345-5497	5	8
7310-01-391-3065	3	9
5310-01-416-1851	1	59
	5	5
7360-01-419-8500	4	8
4730-01-424-5432	1	32
	1	55
5305-01-432-6000	1	60
2910-01-442-2875	2	33
6105-01-442-6342	2	38
5999-01-442-7643	1	4
	2	1
5905-01-443-9038	1	16

STOCK NUMBER	FIG.	ITEM
5342-01-443-9361	1	35
4110-01-452-7317	4	16
7310-01-454-1241	5	19
7310-01-454-1281	5	27
4820-01-454-2024	1	46
7310-01-455-1017	5	18
7360-01-456-9114	4	15
5306-01-463-2101	1	38
5310-01-463-4929	1	13
	1	15
	1	28
7360-01-463-9027	4	14
7360-01-465-4561	4	13
5310-01-475-9244	5	12
	5	14
7360-01-479-0312	3	5
7360-01-475-0063	3	5A
7360-01-479-0344	3	5B
5310-01-483-2638	1	12
	1	17
	1	23
5305-01-484-0936	2	27
7690-01-492-6236	1	33
4520-01-492-6662	2	23
5340-01-492-6700	2	59
4140-01-492-6709	2	39
5340-01-492-6739	2	9
5930-01-492-7272	1	10
4310-01-492-8182	2	42
4310-01-492-8190	2	44
4710-01-492-8200	2	57
3010-01-492-8203	2	34
6150-01-492-8211	2	29
	2	30
5930-01-492-9140	2	15
5365-01-492-9147	2	45
	2	51
4710-01-492-9150	2	55
4710-01-492-9160	2	58
5930-01-492-9245	1	27
7310-01-492-9267	2	22

STOCK NUMBER	FIG.	ITEM
7310-01-492-9271	2	63
7310-01-493-1726	2	18
4540-01-493-1729	2	28
5961-01-493-1761	2	16
7310-01-493-1765	2	20
6130-01-493-1792	1	56
7310-01-493-1801	2	3
4720-01-493-1828	1	29
4720-01-493-1830	1	53
4520-01-493-1836	1	50
5340-01-493-1845	1	19
5340-01-493-2135	1	24
5340-01-493-2184	1	42
4730-01-493-2207	1	30
5305-01-493-2214	1	36
5310-01-493-2243	1	37
5305-01-493-2282	2	62
5310-01-493-2285	2	40
7310-01-493-2287	1	18
5305-01-493-2488	1	20
	1	25
5305-01-493-2489	1	51
5310-01-499-3569	1	44
7105-01-500-0012	4	22
7310-01-507-9310	3	8
7310-01-520-6173	4	2
5340-01-520-6175	4	5
5330-01-520-6178	4	6
7310-01-520-7950	4	10
4510-01-522-2894	4	27
5305-01-529-7722	5	7
4530-01-533-2037	2	24
4140-01-533-2038	2	2
4140-01-533-2053	2	10
4810-01-533-2068	2	47
7310-01-533-2095	2	49
5340-01-533-2105	1	26
5330-01-533-2113	1	41
7310-01-533-2131	1	39
7310-01-533-2159	1	34
7310-01-533-4186	1	52
4810-01-533-4207	2	35
5331-01-533-4279	2	13
5331-01-533-4280	2	12
4720-01-533-4407	2	48
4320-01-533-4444	2	36
5340-01-533-4450	2	21
6150-01-533-4465	2	32
6150-01-533-4483	2	31
5331-01-533-4494	2	25
4010-01-533-4957	1	21
4330-01-533-8771	1	31
	1	54
5330-01-539-3609	2	50
7310-01-539-3617	2	43
5305-01-546-1119	2	6
5310-01-547-5388	5	11
	5	16
5310-01-554-2341	5	3
5310-01-569-5319	5	10
	5	15
7360-01-570-9851	1	1
5310-01-572-4929	5	6
2540-01-572-6182	5	1
5331-01-581-8266	2	26
7330-01-582-6606	4	1
7330-01-582-6605	4	1
6150-01-583-0627	5	21
5340-01-614-4736	5	22
	5	26
5340-01-614-8865	2	53
5330-01-614-8904	2	60
5340-01-614-8907	1	48
5320-01-614-8913	1	40
5331-01-614-8927	2	56
2540-01-614-9082	5	13
6150-01-614-9833	1	47
5355-01-615-1664	2	4
4730-01-615-1910	2	52
5305-01-615-4168	2	41
5305-01-615-6471	1	43
5340-01-616-0379	1	58
7310-01-617-2610	4	21
5305-12-142-5544	2	14
	2	17

END OF WORK PACKAGE

OPERATOR AND FIELD MAINTENANCE

PART NUMBER INDEX

PART NUMBER	FIG.	ITEM
CR-PHMS M5X0.8X25	2	46
CR-PHMS M4X0.7X16	2	54
CR-PHSMS8X.375	2	19
SC M4X16PAN	2	7
SC M4X25PAN	2	8
SL-FHMS M6X1.0X10	2	61
TRH AK1008	1	2
120-01-0010	2	5
120-03-0017	2	11
128-29-D0000	1	11
42132	4	3
42133	4	4
45238	4	17
5-13-5626-1	3	10
5-13-5627-1	3	11
5-13-7644	5	24
	20	7
5-13-7728	5	20
	20	12
60263	4	29
60296	4	20
60423	4	9
	4	18
6322-0	4	22
7335-157	4	5
7615-157	4	10
7634-157	4	17
7634-403	4	18
7635-403	4	19
800T-N169	1	5
92005A318	2	37

PART NUMBER	FIG.	ITEM

END OF WORK PACKAGE

CHAPTER 8

SUPPORTING INFORMATION FOR ASSAULT KITCHEN

SCOPE

This Work Package lists all field manuals, forms, technical manuals and miscellaneous publications referenced throughout this manual.

ARMY REGULATIONS

AR 30-22	The Army Food Service Program
AR 420-55	Food Service and Related Equipment
AR 700-15	Packaging of Materiel
AR 735-11-2	Reporting of Supply Discrepancies
AR 750-1	Army Material Maintenance Policy
AR 750-10	Army Modification Program

DA PAMPHLETS

DA PAM 25-30	Consolidated Index of Army Publications and Blank Forms
DA PAM 30-22	The Army Food Service Program
DA PAM 750-8	The Army Maintenance Management System (TAMMS) Users Manual

FIELD MANUALS

ATTP 4-41 (FM 10-23)	Army Field Feeding and Class I Operations
FM 3-3	Chemical and Biological Contamination Avoidance
FM 3-5	NBC Decontamination
FM 38-701	Packaging of Materials, Packing
FM 4-25.11 (FM 21-11)	First Aid for Soldiers

FORMS

DA Form 2404	Equipment Inspection & Maintenance Worksheet
DA Form 5988	Equipment Inspection & Maintenance Worksheet
DD 361	Transportation Discrepancy Report
SF 364	Report of Discrepancy (ROD)
SF 368	Product Quality Deficiency Report (PQDR)

TECHNICAL BULLETINS

TB 43-0002-22	Maintenance Expenditure Limits for FSC Group 73; FSC Classes 7310, 7320, 7330, and 7360
TB 10-7310-203-23	M1101 and M1102 Trailer Modification

TECHNICAL MANUALS

TM 10-7310-281-13&P	Operator's, Unit, and Direct Support Maintenance Manual, Including Repair Parts and Special Tools List (RPSTL) for Modern Burner Unit (MBU) NSN 7310-01-452-8137 and Modern Burner Unit (MBU-V3) NSN 7310-01-507-9310
TM 4700-15/1	Equipment Maintenance Forms and Procedures
TM 7350-244-3	Procedures for Destruction of Equipment to Prevent Enemy Use

END OF WORK PACKAGE

OPERATOR AND FIELD MAINTENANCE

MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION

MAINTENANCE ALLOCATION CHART

INTRODUCTION

The Army Maintenance System MAC

This introduction provides a general explanation of all maintenance and repair functions authorized at the two maintenance levels under the Two-Level Maintenance System concept.

This MAC (immediately following the introduction) designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component shall be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC in column (4) as:

Field – includes two subcolumns, Crew (C), and Maintainer (F).

Sustainment – includes two subcolumns, Below Depot (H) and Depot (D)

The maintenance to be performed below depot and in the field is described as follows:

1. Crew maintenance. The responsibility of a using organization to perform maintenance on its assigned equipment. It normally consists of inspecting, servicing, lubricating, adjusting, and replacing parts, minor assemblies, and subassemblies. The replace function for this level of maintenance is indicated by the letter "C" in the third position of the SMR code. A "C" appearing in the fourth position of the SMR code indicates complete repair is possible at the crew maintenance level.

2. Maintainer maintenance. Maintenance accomplished on a component, accessory, assembly, subassembly, plug-in unit, or other portion either on the system or after it is removed. The replace function for this level of maintenance is indicated by the letter "F" appearing in the third position of the SMR code. An "F" appearing in the fourth position of the SMR code indicates complete repair is possible at the field maintenance level. Items are returned to the user after maintenance is performed at this level.

3. Below depot sustainment. Maintenance accomplished on a component, accessory, assembly, subassembly, plug-in unit, or other portion either on the system or after it is removed. The replace function for this level of maintenance is indicated by the letter "H" appearing in the third position of the SMR code. An "H" appearing in the fourth position of the SMR code indicates complete repair is possible at the below depot sustainment maintenance level. Items are returned to the supply system after maintenance is performed at this level.

4. Depot sustainment . Maintenance accomplished on a component, accessory, assembly, subassembly, plug-in unit, or other portion either on the system or after it is removed. The replace function for this level of maintenance is indicated by the letter "D" or "K" appearing in the third position of the SMR code. Depot sustainment maintenance can be performed by either depot personnel or contractor personnel. A "D" or "K" appearing in the fourth position of the SMR code indicates complete repair is possible at the depot sustainment maintenance level. Items are returned to the supply systems after maintenance is performed at this level.

The tools and test equipment requirements table (immediately following the MAC) lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from the MAC.

The remarks table (immediately following the tools and test equipment requirements) contains supplemental instructions and explanatory notes for a particular maintenance function.

MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION – CONTINUED

Maintenance Functions

Maintenance functions are limited to and defined as follows:

1. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel). This includes scheduled inspection and gagings and evaluation of cannon tubes.

2. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards on a scheduled basis, i.e., load testing of lift devices and hydrostatic testing of pressure hoses.

3. Service. Operations required periodically to keep an item in proper operating condition, e.g., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases. This includes scheduled exercising and purging of recoil mechanisms. The following are examples of service functions:

    a. Unpack. To remove from packing box for service or when required for the performance of maintenance operations.

    b. Repack. To return item to packing box after service and other maintenance operations.

    c. Clean. To rid the item of contamination.

    d. Touch up. To spot paint scratched or blistered surfaces.

    e. Mark. To restore obliterated identification.

4. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.

5. Align. To adjust specified variable elements of an item to bring about optimum or desired performance

6. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments of test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

7. Remove/Install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

8. Paint (Ammunition Only). To prepare and spray color coats of paint so that the ammunition can be identified and protected. The color indicating primary use is applied, preferably, to the entire exterior surface as the background color of the item. Other markings are to be repainted as original so as to retain proper ammunition identification.

9. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. “Replace” is authorized by the MAC and assigned maintenance level is shown as the third position code of the Source, Maintenance and Recoverability (SMR) code.

10. Repair. The application of maintenance services, including fault location/troubleshooting, removal/installation, disassembly/assembly procedures and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION – CONTINUED

NOTE

The following definitions are applicable to the “repair” maintenance function:

Services. Inspect, test, service, adjust, align, calibrate, and/or replace.

Fault location/troubleshooting. The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or Unit Under Test (UUT).

Disassembly/assembly. The step-by-step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).

Actions. Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

11. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

12. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (e.g., hours/miles) considered in classifying Army equipment/components.

Explanation of Columns in the MAC

Column (1) Group Number. Column (1) lists Functional Group Code (FGC) numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the Next Higher Assembly (NHA).

Column (2) Component/Assembly. Column (2) contains the item names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

Column (3) Maintenance Function. Column (3) lists the functions to be performed on the item listed in column (2). (For a detailed explanation of these functions refer to “Maintenance Functions” outlined above).

Column (4) Maintenance Level. Column (4) specifies each level of maintenance authorized to perform each function listed in column (3), by indicating work time required (expressed as manhours in whole hours or decimals) in the appropriate subcolumn. This work time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work time figures are to be shown for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC. The symbol designations for the various maintenance levels are as follows:

MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION – CONTINUED

Field:

C Crew maintenance
F Maintainer maintenance

Sustainment:

L Specialized Repair Activity (SRA)
H Below depot maintenance
D Depot maintenance

NOTE

The “L” maintenance level is not included in column (4) of the MAC. Functions to this level of maintenance are identified by work time figure in the “H” column of column (4), and an associated reference code is used in the REMARKS column (6). This code is keyed to the remarks and the SRA complete repair application is explained there.

Column (5) Tools and Equipment Reference Code. Column (5) specifies, by code, those common tool sets (not individual tools), common Test, Measurement and Diagnostic Equipment (TMDE), and special tools, special TMDE, and special support equipment required to perform the designated function. Codes are keyed to the entries in the tools and test equipment table.

Column (6) Remarks Code. When applicable, this column contains a letter code, in alphabetic order, which is keyed to the remarks table entries.

Explanation of Columns in the Tools and Test Equipment Requirements

Column (1) – Tool or Test Equipment Reference Code. The tool or test equipment reference code correlates with a code used in column (5) of the MAC.

Column (2) – Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.

Column (3) – Nomenclature. Name or identification of the tool or test equipment.

Column (4) – National Stock Number (NSN). The NSN of the tool or test equipment.

Column (5) – Tool Number. The manufacturer's part number.

Explanation of Columns in Remarks

Column (1) – Remarks Code. The code recorded in column (6) of the MAC.

Column (2) – Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC.

OPERATOR AND FIELD MAINTENANCE

ASSAULT KITCHEN
MAINTENANCE ALLOCATION CHART (MAC)

Table 1. Maintenance Allocation Chart for Assault Kitchen.

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS CODE
			FIELD		SUSTAINMENT			
			CREW	MAINTAINER	BELOW DEPOT	DEPOT		
			C	F	H	D		
00	ASSAULT KITCHEN							
01	TRAY RATION HEATER	Inspect	0.1					
0101	ASSEMBLY, TANK	Inspect	0.1					
		Service	0.2					A
		Repair	0.1	0.6			2,5,6	
0102	SYSTEM, FUEL DELIVERY	Inspect	0.1					
010201	LINE, FUEL	Inspect	0.1					
010202	ADAPTER KIT, GRAVITY FEED	Inspect	0.1					
		Replace	0.1					
010203	FILTER ELEMENT, FLUID	Inspect	0.1					
		Replace	0.2				1,3	
0103	SYSTEM, ELECTRICAL	Inspect	0.1					
010301	SWITCH, TOGGLE	Replace		0.2			4	
010302	LIGHT SWITCH, PUSH-PULL	Repair		0.1			4	
		Replace		0.2			4	
010303	CIRCUIT BREAKER	Replace		0.2			4	
010304	CONNECTOR, ELECTRICAL	Replace		0.2			4	
010305	TERMINAL JUNCTION BLOCK	Replace		0.2			4	
010306	LIQUID LEVEL SWITCH	Replace		0.2			4	
010307	PROBE, MARTRON SENSOR	Replace		0.2			4	

Table 1. Maintenance Allocation Chart for Assault Kitchen – Continued.

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS CODE
			FIELD		SUSTAINMENT			
			CREW	MAINTAINER	BELOW DEPOT	DEPOT		
			C	F	H	D		
010308	MERCURY TILT SWITCH	Replace		0.2			4	
010309	RESISTOR, THERMAL	Replace		0.2			4	
0104	RACK, TRAY RATION	Inspect	0.1					
		Service	0.1					A
		Repair		0.3			6	
		Replace	0.1					
0105	INVERTER, POWER STATIC	Inspect	0.1					
		Test		0.1				
		Repair		0.1			4	
0106	LINE, POWER	Inspect	0.1					
		Replace	0.1					
0107	SKIDS	Inspect	0.1					
		Replace		0.2			4	
0108	SHOCK MOUNT	Replace		0.3			4	
0109	ASSEMBLY, LID	Inspect	0.1					
		Repair		0.3			5	
		Replace	0.1				1,3	
		Adjust	0.1				1,3	
0110	ADAPTER, STRAIGHT, PIPE TO HOSE	Inspect	0.1					
		Service	0.1					B
		Replace	0.2				1,2,3	
0111	VALVE, BALL	Service	0.1					
		Replace	0.2				1,2,3	
0112	DEFLECTOR, EXHAUST	Inspect	0.1					
		Service	0.1					B
		Replace	0.1					
0113	BURNER, MULTI-FUEL	Inspect	0.2					
		Repair		0.2			4	
		Replace	0.4				1,3	
		Test		0.2			1,3	
011301	CONTROL, FLAME SAFEGUARD	Inspect	0.1					
		Replace	0.2				1,3	
011302	FILTER ELEMENT, INTAKE AIR	Replace	0.1				4	

Table 1. Maintenance Allocation Chart for Assault Kitchen – Continued.

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS CODE
			FIELD		SUSTAINMENT			
			CREW	MAINTAINER	BELOW DEPOT	DEPOT		
			C	F	H	D		
011303	PUMP, FUEL	Repair		0.2			4	
		Replace		0.2			4	
011304	SEMICONDUCTOR DEVICE, PHOTO	Replace	0.1					
011305	ATOMIZING CHAMBER	Repair		0.3			4	
		Replace		0.2			4	
011306	FUEL SUMP	Replace		0.1			4	
02	COOKING APPLIANCES	Inspect	0.1					
		Service	0.2					A
		Repair						C, D
0201	CRADLE ASSEMBLY, COOKING POT	Inspect	0.1					
		Service	0.2					A
0202	BURNER UNIT, MODERN V3	Repair						C
0203	RANGE OUTFIT, FIELD, GASOLINE, M59A	Repair						D
03	EQUIPMENT, ANCILLARY							
0301	TABLE, FOLDING LEGS	Inspect	0.1					
		Service	0.2					A
0302	FOOD CONTAINER, INSULATED	Inspect	0.1					
		Service	0.2					A
		Repair	0.1				1,3	
0303	FOOD TRANSPORTER, INSULATED	Inspect	0.1					
		Service	0.2					A
		Repair	0.1				1,3	
0304	CHEST, ICE STORAGE	Inspect	0.1					
		Service	0.2					A
		Repair	0.1				1,3	
0305	DISPENSER, LIQUID INSULATED	Inspect	0.1					
		Service	0.2					A
		Repair	0.2				1,3	

Table 1. Maintenance Allocation Chart for Assault Kitchen – Continued.

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS CODE
			FIELD		SUSTAINMENT			
			CREW	MAINTAINER	BELOW DEPOT	DEPOT		
			C	F	H	D		
04	HARDWARE AND SHELVING	Inspect Replace		0.1 0.2			4	

Table 2. Tools and Test Equipment for Assault Kitchen.

TOOLS OR TEST EQUIPMENT	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
1	C, F	Maintenance Kit (Included within the TRH Maintenance Kit)	7360-01-514-1440	TRHMKT
2	F	Pliers, Slip-Joint (Located inside HMMWV tool bag)	5120-00-223-7397	11655775-3
3	C, F	AK Tool Box (Included inside the yellow plastic tool box)		
4	F	Tool Kit, General Mechanic's (GMTK)	5180-01-483-0249	SC 5180-95-B47
5	F	Tool Set, SATS	4910-01-490-6453	SC 4910-95-A81
6	F	Welding Machine, Arc (TIG) (LIN 47707)	3431-00-235-4728	903 220

Table 3. Remarks for Assault Kitchen.

REMARK CODE	REMARKS
A	Service of equipment refers to cleaning with hot soapy water and/or abrasive cleaning pad to remove mineral residue, dirt, debris, and/or food particles.
B	Service of equipment refers to cleaning and/or clearing of obstructions.
C	Refer to TM 10-7310-281-13&P; Operator's, Unit, and Direct Support Maintenance Manual, Including Repair Parts and Special Tools List (RPSTL) for Modern Burner Unit (MBU) NSN 7310-01-452-8137 and Modern Burner Unit (MBU-V3) NSN 7310-01-507-9310 for Maintenance Procedures.
D	Refer to TM 10-7360-204-13&P; Operator's, Unit, and Direct Support Maintenance Manual, Including Repair Parts and Special Tools List (RPSTL) for RANGE OUTFIT, FIELD, GASOLINE, MODEL M59, NSN 7360-00-082-2153 for Maintenance Procedures.

END OF WORK PACKAGE

OPERATOR AND FIELD MAINTENANCE

ASSAULT KITCHEN
COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS

INTRODUCTION

Scope

This work package lists COEI and BII for the Assault Kitchen (AK) to help you inventory items for safe and efficient operation of the equipment.

General

The COEI and BII information is divided into the following lists:

Components of End Item (COEI). This list is for information purposes only and is not authority to requisition replacements. These items are part of the Assault Kitchen. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Items of COEI are removed and separately packaged for transportation or shipment only when necessary. Illustrations are furnished to help you find and identify the items.

Basic Issue Items (BII). These essential items are required to place the Assault Kitchen (AK) in operation, operate it, and to do emergency repairs. Although shipped separately packaged, BII must be with the Assault Kitchen (AK) during operation and when it is transferred between property accounts. Listing these items is your authority to request/requisition them for replacement based on authorization of the end item by the TOE/MTOE. Illustrations are furnished to help you find and identify the items.

Explanation of Columns in the COEI List and BII List

Column (1) Item Number. Gives you the reference number of the item listed.

Column (2) National Stock Number (NSN) and Illustration. Identifies the stock number of the item to be used for requisitioning purposes and provides an illustration of the item.

Column (3) Description, Part Number/(CAGEC). Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The stowage location of COEI and BII is also included in this column. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

Column (4) Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment. These codes are identified below:

Code	Used on
FWW	Assault Kitchen

Column (5) U/I. Unit of Issue (U/I) indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (2).

Column (6) Qty Rqr Indicates the quantity required."

Table 1. Components Of End Item (COEI) List.

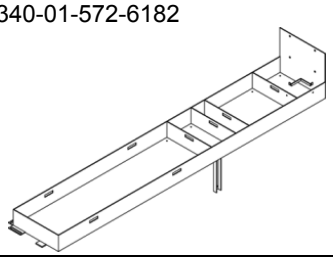
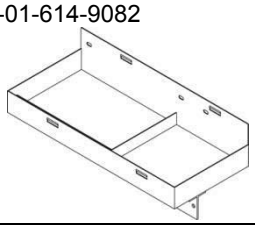
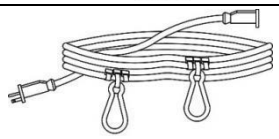
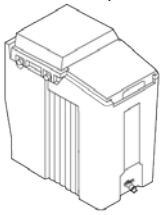
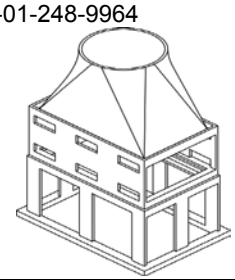
(1) Item Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
1	5340-01-572-6182 	BOX,ACCESSORIES STOWAGE (bracket, LTT, driver side) 5-13-7647 (81337)	FWW	EA	1
2	2540-01-614-9082 	BOX, ACCESSORIES STOWAGE (bracket, LTT, passenger side) 5-13-7648 (81337)	FWW	EA	1
3	6150-01-614-9833	CABLE ASSEMBLY, POWER, ELECTRICAL (power cord supplied with TRH) 128-59-D0000 (04AL0)	FWW	EA	1
4		CABLE, EXTENSION CORD ASSEMBLY 5-13-7644 (81337)	FWW	EA	1
5	7240-01-337-5269	CAN, MILITARY, FUEL (Supplied with TRH) CID A-A-59592 (58536)	FWW	EA	1
6	4110-01-452-7317 (Green) 4110-01-452-7315 (Desert Sand) 	CHEST, ICE STORAGE (GREEN) (In HMMWV) AA52218-II2 (81337) or CHEST, ICE STORAGE (DESERT SAND) (In HMMWV) AA52218-II1 (81337)	FWW	EA	1
7	7330-01-248-9964 	CRADLE ASSEMBLY, COOKING POT (In HMMWV or LTT cargo bed) 5-13-3991 (81337)	FWW	EA	1
8	4520-01-493-1836	DEFLECTOR, EXHAUST (Supplied with TRH) HMV500 (04AL0)	FWW	EA	1

Table 1. Components Of End Item (COEI) List — Continued.

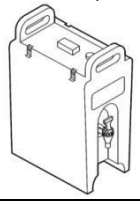
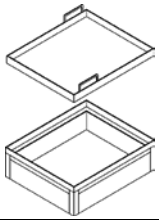
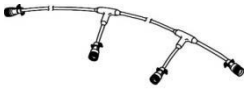
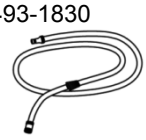
(1) Item Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
9	7310-01-245-6937 (Green) or 7320-01-093-7371 (Tan) 	DISPENSER, LIQUID, INSULATED (GREEN) (In HMMWV or LTT cargo bed) 500LCD-G (21669) or DISPENSER, LIQUID, INSULATED (TAN) (In HMMWV or LTT cargo bed) MIL-D-43916 (81349)	FWW	EA	6
10	7310-01-454-1241 	ELECTRIC ADAPTER, MBU (In MBU Accessories Box) MS0250 (L4703)	FWW	EA	1
11	7330-01-582-6606 or 7330-01-582-6605 	FOOD CONTAINER, INSULATED, GREEN (In HMMWV or LTT cargo bed) UPC400-403 (21669) or FOOD CONTAINER, INSULATED, TAN (In HMMWV or LTT cargo bed) UPC400-157 (21669)	FWW	EA	2
12	7360-01-419-8500 (Green) or 7360-01-419-6261 (Desert Sand) 	FOOD TRANSPORTER, INSULATED, GREEN (In HMMWV or LTT cargo bed) UPCS160PKG-403 (21669) or FOOD TRANSPORTER, INSULATED, DESERT SAND (In HMMWV or LTT cargo bed) UPCS160PKG-157 (21669)	FWW	EA	5
13	7310-01-455-3736 	FUEL ADAPTER, MBU (one Supplied with TRH and one supplied with in MBU Accessories Box) 04938 (36976)	FWW	EA	2
14	7310-01-391-3065 	GRIDDLE ASSEMBLY, FIELD 5-13-5625 (81337)	FWW	EA	1
15	7310-01-455-1017 	HARNESS BRANCH, MBU (In MBU Accessories Box) MS0104 (3AD06)	FWW	EA	1
16	4720-01-493-1830 	HOSE ASSEMBLY, NONMETALLIC (External fuel hose; supplied with TRH) TRH-FLA-001 (04AL0)	FWW	EA	1

Table 1. Components Of End Item (COEI) List — Continued.

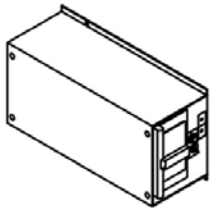
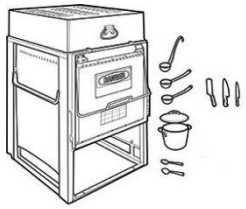
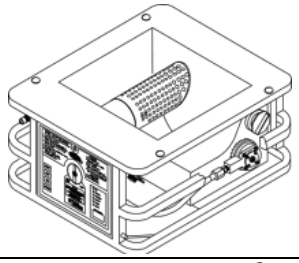
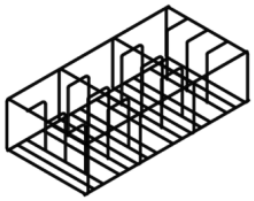
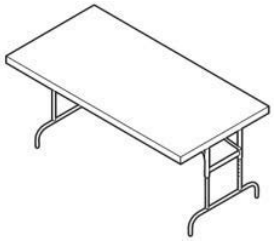
(1) Item Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
17	6130-01-493-1792 	INVERTER, POWER, STATIC (In HMMWV or LTT cargo bed) MIL-24/300NQ-005 (04AL0)	FWW	EA	1
18	7360-01-479-0312 	M59A FIELD RANGE WITH OUTFIT 5-11-2090-1 (81337)	FWW	OT	1
19	7310-01-507-9310 	MODERN BURNER UNIT V3 PD MBU-001 (81349)	FWW	EA	1
20		NATO ADAPTER ASSEMBLY 5-13-7728 (81337)	FWW	EA	1
21	7310-01-492-9254 	RACK, TRAY RATION (Supplied with TRH) TRH931 (04AL0)	FWW	EA	1
22	7105-01-500-0012 	TABLE, FOLDING LEGS (In LTT cargo bed) A-A-59102-1-E-2 (81337)	FWW	EA	3

Table 1. Components Of End Item (COEI) List — Continued.

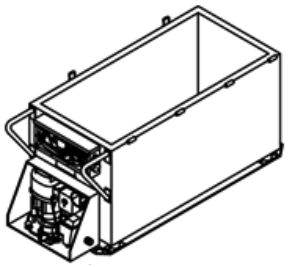
(1) Item Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
23	7310-01-570-9851 	TRAY RATION HEATER (TRH) ARMY (In LTT cargo bed) AK B31008 (04AL0)	FWW	EA	1
24	5310-01-024-90571	WASHER, DRAINLINE (Supplied with TRH) 1508 (14674)	FWW	EA	1

Table 2. Basic Issue Items (BII).

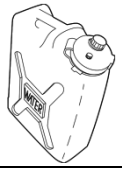
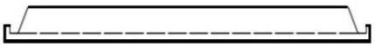
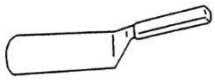
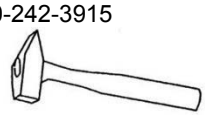
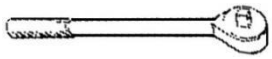
(1) Item Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
1		BRACKET, FIRE EXTINGUISHER (mounted on LTT) 5DC (7N423)	FWW	EA	1
2	7920-00-291-5815 	BRUSH, WIRE, SCRATCH (in AK Tool Box) 7920-00-291-5815 (83421)	FWW	EA	1
3	7420-00-089-3827 	CAN, MILITARY, (TAN, 5 GALLON WATER) (In HMMWV or LTT cargo bed) MIL-C-43613 TYPE 1 (81349)	FWW	EA	6
4	7330-01-234-2204 	CAN OPENER BLADE, MOUNTED (in Utensil Box) K004 (83190)	FWW	EA	2
5	4020-01-168-9371 	CORD ASSEMBLY, ELASTIC (6 are mounted on LTT) 3891T16 (39428)	FWW	EA	10
6	7360-01-470-1237 	DIVIDER BAR (in Utensil Box) DIV12 WHITE (2 1669)	FWW	EA	5
7	7330-00-205-3336 	EGG WHIP (in Utensil Box) A-A-394 (58536)	FWW	EA	1
8	5120-00-227-8107 	EXTENSION, SOCKET WRENCH (in AK Tool Box) A-A-2170 (58536)	FWW	EA	1
9	4210-00-165-4703 	EXTINGUISHER, FIRE, (DRY CHEMICAL, 5 POUNDS) A-A-393 (58536)	FWW	EA	1
10	7330-00-634-1995 	FOOD TURNER (in Utensil Box) A-A-1640 (58536)	FWW	EA	2
11	8415-01-511-4637 	GLOVES, CHEMICAL AND OIL PROTECTIVE (in Utensil Box) 17091 (6M644)	FWW	EA	4
12	5120-00-242-3915 	HAMMER, HAND, (3 POUND) (in AK Tool Box) A-A-1292 (58536)	FWW	EA	1
13	5120-00-240-5364 	HANDLE, SOCKET WRENCH, (3/8 IN) (in AK Tool Box) A-A-2165 (58536)	FWW	EA	1

Table 2. Basic Issue Items (BII) — Continued.

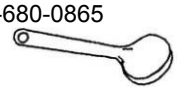
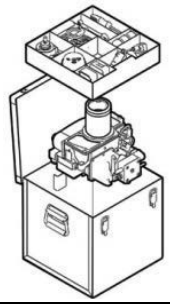
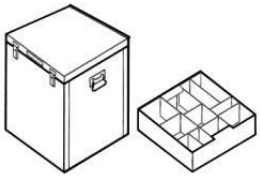
(1) Item Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
14	5120-00-432-2196	KEY SET, SOCKET HEAD SCREW (in AK Tool Box) B18.3.2M (05047)	FWW	EA	1
15	5110-00-892-5071	KNIFE, CRAFTSMAN'S (in AK Tool Box) PD5110-00-892-5071 (80244)	FWW	EA	1
16	7330-00-248-1153	LADLE, KITCHEN, 6 OZ (in Utensil Box) 7330-00-248-1153 (80244)	FWW	EA	1
17	7330-00-680-0865 	LADLE, KITCHEN, 4 OZ (in Utensil Box) 7330-00-680-0865 (80244)	FWW	EA	1
18	7360-01-514-1440 	MAINTENANCE KIT, BURNER (Contains Items 19 through 44) (In HMMWV or LTT cargo bed, on board spares) TRHMKT (04AL0)	FWW	EA	1
19	2540-01-533-4950 	BOX, ACCESSORIES STOWAGE (stainless steel box with tray; in Burner Maintenance Kit) 8747HMVMB (04AL0)	FWW	EA	1
20	6150-01-492-9196	CABLE ASSEMBLY, POWER, ELECTRICAL (Burner Test Power Cord, in Burner Maintenance Kit) B42000-95-0019 (04AL0)	FWW	EA	1
21	6150-01-533-4465	CABLE, ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL (Photocell Cable, in Burner Maintenance Kit) B42005-95-0018C (04AL0)	FWW	EA	1
22	7310-01-492-9267	CHAMBER, ATOMIZING (in Burner Maintenance Kit) B42000950027 (04AL0)	FWW	EA	1
23	7310-01-493-1729	CONTROL, FLAME SAFEGUARD (Primary Control, in Burner Maintenance Kit) B42000950017 (04AL0)	FWW	EA	1

Table 2. Basic Issue Items (BII) — Continued.

(1) Item Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
24	3010-01-492-8203	COUPLING, SHAFT, RIGID (Nylon Pump Coupling, in Burner Maintenance Kit) B42000-95-0011 (04AL0)	FWW	EA	1
25	4330-01-533-8771	FILTER ELEMENT, FLUID (in Burner Maintenance Kit) 71936 (04AL0)	FWW	EA	1
26	4310-01-492-8190	FILTER ELEMENT, INTAKE AIR CLEANER (Compressor Air Filter, in Burner Maintenance Kit) B42000950005 (04AL0)	FWW	EA	1
27	6685-01-533-8374	GAGE, PRESSURE, DIAL INDICATING (FUEL) (in Burner Maintenance Kit) 3846K34 (04AL0)	FWW	EA	2
28	6685-01-533-8686 or 4002K15	GAGE, VACUUM, INDICATING (AIR) (in Burner Maintenance Kit) 4002K15 (04AL0)	FWW	EA	1
29	5340-01-582-4527	HARDWARE KIT, MECHANIC EQUIPMENT (in Burner Maintenance Kit) TRH-CKIT (04AL0) Included items: a. 2 Hose Clamps 4730-01-424-5432; b. 2 Cotter Pins 5315-01-128-6802; c. 2 Pin, Quick Release 5315-01-581-8304)	FWW	EA	1
30	4520-01-492-6662	IGNITER, SPARK, FUEL (Ignition Electrode, in Burner Maintenance Kit) B42005-95-0028 (04AL0)	FWW	EA	1
31	7310-01-442-8340	MULTI-FUEL BURNER (Airtronic Burner, in Burner Maintenance Kit) B42000-95-0001 (04AL0)	FWW	EA	1

Table 2. Basic Issue Items (BII) — Continued.

(1) Item Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
32	5331-01-582-7721	O-RINGS SET (in Burner Maintenance Kit) A02002 (04AL0) Included items: a. 2 O-RING (Atomizing Chamber O-Ring), 5331-01-533-4280; 9263K212 (04AL0) b. 2 O-RING (Crossover Tube O-Ring), 5331-01-614-8927; OR.38X.50VITON (04AL0) c. 1 O-RING (Atomizing Chamber Drain O-Ring), 5331-01-533-4279 9263K238 (A4AL0) d. 1 O-RING (FCM Insert O-Ring), 5331-01-581-8266; 9263K135 (04AL0) e. 1 O-RING (FCM Cover Gasket), 5330-01-533-4494; B42005-04-0024G (04AL0)	FWW	EA	1
33	4310-01-492-8182	PARTS KIT, PISTON ASSEMBLY, COMPRESSOR (Piston Ring and O-Ring Kit in Burner Maintenance Kit) B42000-95-0004 (04AL0)	FWW	EA	1
34	2910-01-442-2875	PUMP, FUEL ELECTRICAL (Fuel Pump with Solenoid Valve Assembly, in Burner Maintenance Kit) B42000-95-0010 (04AL0)	FWW	EA	1
35	4730-01-533-8371	ADAPTER, STRAIGHT, PIPE TO GAS FITTING (1/2-inch Gauge Coupling Extensions, in Burner Maintenance Kit) 9171K61 (39428)	FWW	EA	2
36	5120-00-234-8913	SCREWDRIVER, CROSS TIP (in Burner Maintenance Kit) B107.30 (05047)	FWW	EA	1
37	5120-00-236-2140	SCREWDRIVER, FLAT TIP (1/8 inch screwdriver, in Burner Maintenance Kit) B107.600 (05047)	FWW	EA	1
38	5120-00-236-2127	SCREWDRIVER, FLAT TIP (3/16 inch screwdriver, in Burner Maintenance Kit) B107.15 (05047)	FWW	EA	1
39	5980-01-493-1761	SEMICONDUCTOR DEVICE, PHOTO (Photocell with Base, in Burner Maintenance Kit) B42000-95-0018 (04AL0)	FWW	EA	1
40	6625-01-533-8244	TEST SET, CONTROL (Diagnostic Test Box, in Burner Maintenance Kit) B42005-95-0050 (04AL0)	FWW	EA	1
41	7310-01-493-1726	TRANSFORMER, IGNITION (in Burner Maintenance Kit) B42000950029 (04AL0)	FWW	EA	1
42	5120-00-177-7325	WRENCH, BOX AND OPEN END, COMBINATION (10 mm Wrench, in Burner Maintenance Kit) AS955 (81343)	FWW	EA	1
43	5120-01-349-1477	WRENCH, BOX AND OPEN END, COMBINATION (11 mm Wrench, in Burner Maintenance Kit) AS955 (81343)	FWW	EA	1

Table 2. Basic Issue Items (BII) — Continued.

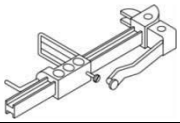
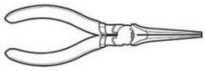
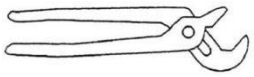
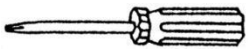
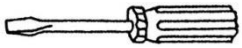
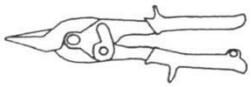
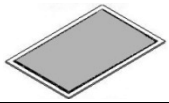
(1) Item Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
44	5120-00-228-9508	WRENCH, BOX AND OPEN END, COMBINATION (5/8 in wrench, in Burner Maintenance Kit) AS954 (81343)	FWW	EA	1
45	1670-01-541-8519	NET, CARGO, AERIAL DELIVERY 5100-502 (04024)	FWW	EA	1
46	5120-01-335-0349	NUTDRIVER, 7/16 IN (in AK Tool Box) 40-614 (08292)	FWW	EA	1
47	7330-01-411-9789 	OPENER, CAN, MOUNTED (in Utensil Box) A-A-52206 (58536)	FWW	EA	1
48	5120-00-247-5177 	PLIERS, LONG NOSE (in AK Tool Box) B107.13 (05047)	FWW	EA	1
49	5120-00-278-0352 	PLIERS, SLIP JOINT (in AK Tool Box) B107.23 (05047)	FWW	EA	1
50	5120-00-234-8913 	SCREWDRIVER, CROSS TIP (#2) (in AK Tool Box) BD122 (75347)	FWW	EA	1
51	5120-00-227-7334 	SCREWDRIVER, FLAT TIP (in AK Tool Box) B107.15 (05047)	FWW	EA	1
52	5110-00-273-0128 	SHEARS, METAL CUTTING, 9.25 IN LG (in utensil box) B107.16M (05047)	FWW	EA	1
53	5340-01-581-1821 	SLPC SHELF 5-13-6844 (81337)	FWW	EA	6
54	5120-00-227-6703	SOCKET, SOCKET WRENCH, 7/16 X 3/8 drive (in AK Tool Box) A-A-1404 (58536)	FWW	EA	1
55	5120-00-227-6704	SOCKET, SOCKET WRENCH, 9/16 X 3/8 drive (in AK Tool Box) A-A-1404 (58536)	FWW	EA	1
56	7330-00-205-1421	SPOON, FOOD SERVICE, SLOTTED (15 in) (in Utensil Box) A-A-1082 (58536)	FWW	EA	5
57	7340-00-240-7079	SPOON, FOOD SERVICE, SOLID (13 in) (in Utensil Box) A-A-1082 (58536)	FWW	EA	7

Table 2. Basic Issue Items (BII) — Continued.

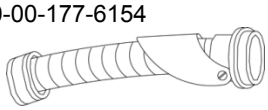
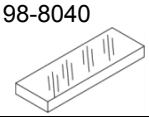
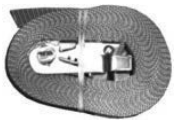
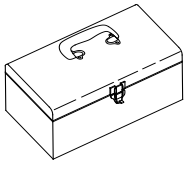
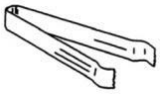
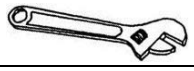
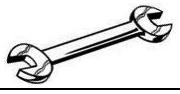
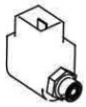
(1) Item Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
58	7240-00-177-6154 	SPOUT, CAN, FLEXIBLE (In MBU Accessory Box) 11677020 (19207)	FWW	EA	1
59	5345-00-198-8040 	STONE, SHARPENING (in Utensil Box) ANSI-B74.12 (80204)	FWW	EA	1
60	6685-00-444-6500	THERMOMETER, SELF-INDICATING, BIMETALLIC (in Utensil Box) K79-3 (29 907)	FWW	EA	4
61	3990-01-582-8559 	TIE DOWN, CARGO, VEHICLE (quantity of 5 in AK Tool Box) GR1X14FT (0HBT5)	FWW	EA	17
62	3990-01-582-5996	TIE DOWN, CARGO, VEHICLE GR1X25FT (0HBT5)	FWW	EA	3
63	3990-01-582-6581	TIE DOWN, CARGO, VEHICLE GR1X5FT (0HBT5)	FWW	EA	4
64		TM 10-7310-281-13&P Operator's, Unit, and Direct Support Maintenance Manual, including Repair Parts and Special Tools List (RPSTL) for Modern Burner Unit (MBU) NSN 7310-01-452-8137 and Modern Burner Unit (MBU-V3) NSN 7310-01-507-9310	FWW	EA	1
65		TM 10-7360-230-13&P Operator and Field Maintenance Manual including Repair Parts and Special Tools List for Assault Kitchen (AK)	FWW	EA	1
66		TM-10-7360-204-13&P Operator, Organizational and Direct Support Maintenance Manual including Repair Parts and Special Tools List for Range Outfit, Field, Gasoline, Model M59 NSN 7360-00-082-2153	FWW	EA	1
67	5140-01-617-7511 	TOOL BOX, PORTABLE (AK Tool Box) 2H172 (25795)	FWW	EA	1

Table 2. Basic Issue Items (BII) — Continued.

(1) Item Number	(2) National Stock Number (NSN)	(3) Description, Part Number/(CAGEC)	(4) Usable On Code	(5) U/I	(6) Qty Rqr
68	5140-01-524-6058	TOOL BOX, PORTABLE (MBU Accessory Box; or Utensil Box) 7335A1 (39428)	FWW	EA	2
69	7330-00-616-0998 	TONGS, FOOD SERVING, (9") (in Utensil Box) 7330-00-616-0998 (64067)	FWW	EA	6
70	5120-00-240-5328 	WRENCH, ADJUSTABLE (in AK Tool Box) A-A-2344 (58536)	FWW	EA	1
71	5120-00-187-7126 	WRENCH, OPEN END (in AK Tool Box) B107.100 (05047)	FWW	EA	1
72	2540-01-484-2632 or 2540-01-413-6985	KIT, CANVAS (tan) 55274 (0V8C5) or COVER, FITTED VEHICULAR CAB (camo) 55181 (0V8C5)	FWW	EA	1
73	4810-01-533-2068	AIR SOLENOID VALVE BODY AND COIL (in Burner Maintenance Kit) B42005-04-0006 (04AL0)	FWW	EA	1
74	4810-01-533-4207 	FUEL SOLENOID (in Burner Maintenance Kit) B42005-04-0013 (04AL0)	FWW	EA	1
75	7340-00-488-7950	COOK'S KNIFE (in Utensil Box) A-A-2733 (58536)	FWW	EA	1
76	7340-00-197-1271	KNIFE, BONING (in Utensil Box) A-A-2733 (58536)	FWW	EA	1
77	7330-00-272-2489	DIPPER, KITCHEN (in Utensil Box) A-A-1752 (58536)	FWW	EA	1
78	7330-00-292-2307	POT, COOKING (15 gallon with cover) DWG NO. 2-9-120 (81337)	FWW	EA	1

END OF WORK PACKAGE

OPERATOR AND FIELD MAINTENANCE

ASSAULT KITCHEN
ADDITIONAL AUTHORIZATION LIST (AAL)

INTRODUCTION

Scope

This work package lists additional items you are authorized for the support of the Assault Kitchen.

General

This list identifies items that do not have to accompany the Assault Kitchen and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

Explanation of Columns in the AAL

Column (1) National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

Column (2) Description, Part Number/(CAGEC). Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the part number and Commercial and Government Entity Code (CAGEC) (in parentheses).

Column (3) Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment.

Code	Used On
FWW	Assault Kitchen

Column (4) U/I. Unit of Issue (U/I) indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (1).

Column (5) Qty Recm indicates the quantity recommended.

Table 1. Additional Authorization List.

(1) National Stock Number (NSN)	(2) Description, Part Number/(CAGEC)	(3) Usable On Code	(4) U/I	(5) Qty Recm
8415-00-634-5023	APRON, RUBBER 021-758 (15481)	FWW	EA	1
7310-01-454-1249	BATTERY (PAIR), MBU MS0225 (3AD06)	FWW	EA	1
7310-01-453-6565	BATTERY MODULE, MBU MS0200 (3AD06)	FWW	EA	1
7310-01-455-0665	CABLE, LONG, MBU MS0101 (3AD06)	FWW	EA	2
7310-01-455-1017	CABLE, 2 BRANCH MBU MS0104 (3AD06)	FWW	EA	4
7310-01-507-9310	MODERN BURNER UNIT, V-3 MS0003 (3AD06)	FWW	EA	3
7310-01-502-9455	POWER CONVERTER MS0160 (3AD06)	FWW	EA	1
7310-01-493-2622	CANVAS, FOUL WEATHER CE-FW-001 (04AL0)	FWW	EA	1
7310-01-509-4453	EXTENSION CORD SHORT, MBU MS0106 (3AD06)	FWW	EA	2
7310-01-454-1281	EXTENSION CORD, MBU, 50 FT. MS0400 (3AD06)	FWW	EA	2
7310-01-455-3735	FUEL LINE, MBU MS0350 (3AD06)	FWW	EA	1
7240-01-337-5269	CAN, FUEL, 5 GAL. 05482 (36976)	FWW	EA	1
7360-01-479-0312	M59A FIELD RANGE AND OUTFIT 5-11-2090-1 (81337)	FWW	EA	1
7360-01-475-0063	RANGE, FIELD, M59A (RANGE CABINET ONLY) 5-11-2090 (81337)	FWW	EA	1
7360-01-479-0344	M59A FIELD RANGE OUTFIT (STOCKPOTS, SQUARE HEAD, AND UTENSILS) 5-11-2076 (81337)	FWW	EA	1
7360-01-476-6715	MKT GRIDDLE 5-13-6516 (81337)	FWW	EA	1
7360-01-250-3652	BASE RACK 5-13-3868 (81337)	FWW	EA	2
7360-01-250-3649	BURNER RACK 5-13-3875 (81337)	FWW	EA	2
7360-01-048-2184	COOKING RACK 5-13-2541G2 (81337)	FWW	EA	2
4510-01-541-4791	SINK SCULLERY 48401001 (0U5N7)	FWW	EA	3
7360-01-541-3334	RACK, BASE 48041009 (0U5N7)	FWW	EA	3

(1) National Stock Number (NSN)	(2) Description, Part Number/(CAGEC)	(3) Usable On Code	(4) U/I	(5) Qty Recm
7360-01-541-2909	RACK, BURNER 48041008 (0U5N7)	FWW	EA	3
5340-01-541-0691	COVER, SINK 48041003 (0U5N7)	FWW	EA	3
4720-01-541-0740	DRAIN HOSE ASSEMBLY, 3 SINK 48041007 (0U5N7)	FWW	EA	1
5340-01-541-4998	HEAT SHIELD, SINK COUPLER 48041038 (0U5N7)	FWW	EA	2
5340-01-541-1917	HEAT SHIELD, SINK EDGE 48041039 (0U5N7)	FWW	EA	1
5340-01-541-4996	HEAT SHIELD, SINK FRONT 48041036 (0U5N7)	FWW	EA	3
4510-01-541-0753	DRAIN TABLE 48041010 (0U5N7)	FWW	EA	1
4510-01-541-2489	GREASE SEPARATOR 48041024 (0U5N7)	FWW	EA	1
6150-01-541-3307	CABLE, POWER, GREASE SEPARATOR 48043001 (0U5N7)	FWW	EA	1
4720-01-541-0370	HOSE, GREASE SEPARATOR DRAIN HOSE 48041006 (0U5N7)	FWW	EA	1
9320-01-541-2954	EXTENSION CORD, 4 OUTLET 04429-00-02 (1CG98)	FWW	EA	1
5935-01-541-1208	GROUND FAULT CIRCUIT INTERUPTER 6975K63 (39428)	FWW	EA	1
6665-01-541-2811	CO MONITOR 48041033 (0U5N7)	FWW	EA	1
7125-01-334-3159	STORAGE RACK 48041025 (0U5N7)	FWW	EA	3
7320-01-541-3326	BASKET, IMMERSION 48041023 (0U5N7)	FWW	EA	1
7195-01-541-5343	TABLE, FOLDING LEGS 48045015 (0U5N7)	FWW	EA	3
4510-01-541-0667	STRAINER, WASTE DRAIN 48042008 (0U5N7)	FWW	EA	3
5120-00-224-3156	WRENCH, OPEN END BOX 0672 (5506)	FWW	EA	1
8970-01-576-1950	REMOTE FEEDING CLEANING KIT SANITATION KIT (81337)	FWW	EA	1
7310-01-535-7010	PAN, EGG, TRH TRHA450 (04AL0)	FWW	EA	1
7310-01-535-7018	BASKET, STEAMER, TRH TRHA520 (04AL0)	FWW	EA	1
7310-01-587-1616	LINER, BOIL IN BAG TRH-BIB-24 (04AL0)	FWW	EA	1
6260-01-535-1647	LANTERN, MULTI FUEL MR2 (3G5K6)	FWW	EA	1
6230-01-485-6376	LIGHT, EXTENSION 31-5004M-IP (06967)	FWW	EA	2

(1) National Stock Number (NSN)	(2) Description, Part Number/(CAGEC)	(3) Usable On Code	(4) U/I	(5) Qty Recm
6230-01-483-7562	LIGHT SET, GENERAL ILLUMINATION 31-5004M (06967)	FWW	EA	1
7330-00-078-5706	BOARD, FOOD CHOPPING AND SLICING A-A-391SZ1 (80244)	FWW	EA	1
8415-01-092-3910	GLOVES, HEAT PROTECTIVE TYPE II 6001627 (80195)	FWW	EA	2

END OF WORK PACKAGE

OPERATOR AND FIELD MAINTENANCE

ASSAULT KITCHEN
EXPENDABLE AND DURABLE ITEMS LIST

INTRODUCTION

Scope

This work package lists expendable and durable items that you will need to operate and maintain the ASSAULT KITCHEN. This list is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V Repair Parts, and Heraldic Items), CTA 50-909, Field and Garrison Furnishings and Equipment, or CTA 8-100, Army Medical Department Expendable/Durable Items.

Explanations of Columns in Expendable/Durable Items List

Column (1) Item No. This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (for example, Use brake fluid (WP 0098, Item 5)).

Column (2) Level. This column includes the lowest level of maintenance that requires the listed item (include as applicable: C=Crew, F=Maintainer or ASB, H=Below Depot or TASMG, D=Depot)..

Column (3) National Stock Number (NSN). This is the NSN assigned to the item which you can use to requisition it.

Column (4) Item Name, Description, Part Number/(CAGEC). This column provides the other information you need to identify the item. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

Column (5) U/I. Unit of Issue (U/I) code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

Table 1. Expendable and Durable Items List.

(1) Item No.	(2) Level	(3) National Stock Number (NSN)	(4) Item Name, Description, Part Number/(CAGEC)	(5) U/I
1	C	7930-01-363-8631	ABSORBENT MATERIAL, OIL AND WATER (IJA49) MAT203	BG
2	C	8105-01-221-3239	BAG, PLASTIC, CONTAMINATED WASTE, SIZE 3 (58536) A-A-2299	RO
3	C	7920-00-061-0038	BRUSH, SCRUB (58536) A-A-2074	EA
4	C	5940-00-665-7317	SPLICE, CONDUCTOR, # 18-22 (00779) 1-34070-1	EA
5	C	6850-00-965-2280	DESICCANT, ACTIVATED (81349) MIL-D-3464	BG
6	C	7930-00-985-6911	DETERGENT, GENERAL PURPOSE, MILD (81349) MIL-D-16791	GL
7	C	6545-00-919-6650	FIRST AID KIT, GENERAL PURPOSE (64616) IRR A-6882	EA
8	C	6545-00-656-1094	FIRST AID KIT, GENERAL PURPOSE (80244) GG-K-391 TYPE 3	EA
9	F	8415-00-009-1900	GLOVES, CHEMICAL AND OIL PROTECTIVE (86523) N36	PR
10	F	4240-00-190-6432	GOGGLES, INDUSTRIAL (58536) A-A-1110	PR
11	C	9150-00-529-7518	OIL, PENETRATING (81348) A-A-50493	CN
12	C	7920-00-659-9175	PAD, SCOURING (80244) L-P-0050TY1SZ1	PK
13	C	7920-00-205-1711	RAG, WIPING (58536) A-A-2522	BE
14	F	5320-01-177-7940	RIVET, POP (90915) 90004155	LB
15	F	3439-01-532-1787	ROD, WELDING, STAINLESS (34920) 308LT30	CO
16	F	9160-01-515-2484	SEALANT, RTV (45152) 3119525	EA
17	F	5975-00-074-2072	STRAPS, TIEDOWN, ELECTRICAL COMPONENT (81343) MS3367-1-9	HD
18	F	5970-00-644-3167	TAPE, ELECTRICAL INSULATION, ¾ INCH WIDTH (58536) A-A-2094	RO
19	C	4920-01-212-9235	TAPE, TEFLON (22380) 2325179	RO
20	F	8945-01-529-6771	VEGETABLE OIL (54027) VEGETABLE OIL	CO

END OF WORK PACKAGE

OPERATOR AND FIELD MAINTENANCE

ASSAULT KITCHEN
TOOL IDENTIFICATION LIST

INTRODUCTION

Scope

This work package lists all common tools and supplements and special tools/fixtures needed to maintain the Assault Kitchen.

Explanation of Columns in the Tool Identification List

Column (1) Item No. This number is assigned to the entry in the list and is referenced in the initial setup to identify the item, for example, “Extractor (WP 0091, Item 17)”.

Column (2) Item Name. This column lists the item by noun nomenclature and other descriptive features (for example, Gage, belt tension).

Column (3) National Stock Number (NSN). This is the National Stock Number (NSN) assigned to the item; use it to requisition the item.

Column (4) Part Number/(CAGEC). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity) which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items. The manufacturer’s Commercial and Government Entity Code (CAGEC) is also included.

Column (5) Reference. This column identifies the authorizing supply catalog or RPSTL for items listed in this work package.

Table 1. Assault Kitchen Tool Identification List.

(1) Item No.	(2) Item Name	(3) National Stock Number	(4) Part Number/ (CAGEC)	(5) Reference
1	Burner Maintenance Kit (in stainless steel box)	7360-01-514-1440	TRHMKT (04AL0)	TM 10-7360-230-13&P
2	Pliers, Slip-Joint (in AK Tool Box)	5120-00-278-0352	B107.23 (05047)	TM 10-7360-230-13&P
3	Tool Box (AK Tool Box)		2H172 (25795)	TM 10-7360-230-13&P
4	Tool Kit (GMTK)	5180-01-483-0249	12B470000-1 (59678)	TM 10-7360-230-13&P
5	Tool Set, SATS, Base	4910-01-490-6453	SC 4910-95-A81 (59678)	TM 10-7360-230-13&P
6	Welding Machine, Arc (TIG) (LIN 47707)	3431-00-235-4728	903 220 (40608)	TM 10-7360-230-13&P

END OF WORK PACKAGE

INDEX

A

abbreviations/acronyms 0001-3
Additional Authorization List (AAL) 0069-1
AK tool box, equipment data 0002-3
AK utensil box, equipment data 0002-4
RPSTL ancillary equipment..... 0069-1
Assault Kitchen (AK) NSN, part number 0001-1

B

Basic Issue Items (BII) 0068-5
burner maintenance kit
  equipment data 0002-4
  installation 0014-42
burner, MBU. *See* Modern Burner Unit (MBU)
burner, multi-fuel
  air filter 0028-1
  atomizing chamber..... 0010-13, 0045-1
  control box 0009-5, 0009-9
  controls and indicators 0004-4, 0004-5
  crossover tube 0010-12
  equipment data 0002-2
  flame safeguard control 0027-1
  flow control module 0010-11
  fuel filter 0009-7, 0019-1
  fuel flow, troubleshooting 0010-6
  fuel leak, troubleshooting 0009-13, 0010-8
  fuel pump 0044-1
  fuel sump 0010-8, 0046-1
  installation in TRH..... 0009-13, 0010-7
  motor, troubleshooting 0010-15
  photocell (semiconductor cell) 0009-8, 0029-1
  PMCS procedures..... 0013-1
  priming procedure 0009-6
  repair 0043-1
  replace 0026-1
  RPSTL group 0113 0069-1
  test 0011-1
  theory of operation 0003-2
burner (diagnostic) test box
  air compressor gauge testing 0011-15
  controls and indicators 0004-6
  fuel pump and priming test 0011-12
  fuel pump gauge testing 0011-16
  ignition transformer test 0011-11
  motor and air compressor test 0011-9
  photocell test..... 0011-6
  power flow test 0011-5
  test firing 0011-18
  troubleshooting, use for 0009-11, 0011-2

C

can opener
  operation 0005-7
capabilities and features..... 0002-1
cargo net installation..... 0014-4
cargo strap ratchet tightening 0014-2
cleaning 0008, 0016-1
Components of End Item (COEI) 0068-2
configuration
  mobile..... 0005-2
  static 0005-1, 0015-1
controls and indicators 0004-1
cooking appliances RPSTL 0068-2
cooking pot assembly, operation..... 0005-9
cooking pot cradle assembly,
  equipment data 0002-6
  installation 0014-6
  PMCS procedure..... 0013-5
corrosion prevention and control (CPC)..... 0001-1

D

data, equipment..... 0002-2
decals and instruction plates 0005-13
description
  location of major components 0002-1
  use of operator's controls and indicators . 0004-1
destruction of army materiel to prevent
  enemy use 0001-2
driver side storage bracket 0050-1

E

electrical troubleshooting..... 0009-1
equipment
  breakdown and stowage 0005-12
  characteristics, capabilities, features 0002-1
  data 0002-2
  improvement recommendations (EIR) 0001-1
expendable and durable items list..... 0068-2

F

features, equipment characteristics, and
capabilities..... 0002
field range M59A & outfit, equipment data .. 0002-6
fire extinguisher
  installation 0014-50
  PMCS procedure..... 0013-6
fuel can
  adapter kit, gravity feed..... 0018-1
  installation 0014-44
  troubleshooting..... 0009-6
fuel filter 0009-7, 0019-1
fuel leak, troubleshooting 0009-13

G

general information 0001
griddle assembly
  equipment data 0002-6
  operation 0005-9

H

hardware and shelving 0050-1
  RPSTL group 04 0068-2
hazardous material warning ..... f

I

ice chest installation 0014-6
initial adjustments, before use, self test 0005-3
insulated beverage dispenser (IBD)
  equipment data 0002-5
  installation 0014-22
  operation 0005-8
  repair 0030-1
insulated food container (IFC)
  equipment data 0002-5
  installation 0014-19
  operation 0005-6
  repair 0030-1
inverter
  controls and indicators 0004-3
  equipment data 0002-2
  installation 0014-29, 0014-36
  test, repair 0040-1
  troubleshooting 0009-1

L

Light Tactical Trailer (LTT)
  d-ring placement 0014-11
  storage (preparation for movement) 0005-16
  storage rack installation 0014-12
location of major components 0002-1

M

M1097 or M1152 HMMWV installation 0014-3
M59A field range and outfit
  equipment data 0002-6
  operation 0005-9
Maintenance Allocation Chart (MAC)..... 0069-1
maintenance forms, records, reports 0001-1
major components, description, location ... 0002-1
mobile configuration 0005-2
Modern Burner Unit (MBU)
  accessories equipment data 0002-5
  MBU equipment data 0002-3
  operational check-out list 0005-4
  PMCS procedures..... 0013-5
  theory of operation 0003-1
multi-fuel burner. *See* burner, multi-fuel

N

National Stock Number index 0069-1
nomenclature cross-reference list 0001-3

O

operation under unusual conditions 0007-1
  extreme heat 0007-4
  high altitude 0007-5
  rain and wet climate 0007-2
  salt water 0007-5
  snow and extreme cold 0007-3
  winds and dust 0007-1
operation under usual conditions ...0005-1, 0006-1
operator controls and indicators 0004-1

P

part number index..... 0068-1
passenger side storage bracket 0050-6
power inverter. *See* inverter
preparation for shipment 0052-1
preparation for storage 0051-1
Preventive Maintenance Checks and Services (PMCS)
  introduction..... 0012-1
  procedures for Assault Kitchen 0013-1

R

records, reports, maintenance forms..... 0001-1
references..... 0069-1
Repair Parts and Special Tools List (RPSTL)
  group 01, tray ration heater..... 0068-1
  group 0113, burner, multi-fuel 0069-1
  group 02, cooking appliances 0068-2
  group 03, ancillary equipment 0069-1
  group 04, hardware and shelving..... 0068-2
  introduction..... 0069-1
reporting errors, recommending improvements i

S

safety ..... a, 0001-5
safety features, tray ration heater..... 0003-3
self test, initial adjustments 0005-3
service upon receipt
  general 0014-1
  static configuration 0015-1
serving utensil kit
  operation 0005-7
shipment, preparation for 0052-1
side loading pan carrier (SLPC)
  equipment data 0002-5
  installation 0014-17
  repair 0030-5
static configuration..... 0015-1
storage bracket.....0050-1, 0050-6
storage, preparation for 0051-1

T

tables, folding
installation 0014-47
operation 0005-5
technical manual, how to use xiii
theory of operation 0003-1
tool box, AK
equipment data 0002-3
installation 0014-5, 0014-58
tool identification list 0069-1
tools and test equipment 0069-4
trailer. *See* Light Tactical Trailer
tray ration heater (TRH)
ball valve 0024-2
boil mode 0009-11
burner. *See* burner, multi-fuel
circuit breaker 0033-1
controls and indicators 0004-1
electrical system PMCS 0013-4
equipment data 0002-2
electrical connector 0034-1
electrical control box schematic 0003-3
electronics troubleshooting 0010-2
exhaust deflector 0025-1
fuel system PMCS 0013-3
installation 0014-51
lid assembly 0022-1, 0047-1
light switch, push-pull 0032-1
liquid level switch 0036-1
multi-fuel burner. *See* burner, multi-fuel
operation 0006-1
operational check-out list 0005-3
power cord 0006-2, 0021-1
RPSTL group 01 0068-1
safety features 0003-3
shock mount 0042-1
straight pipe to hose adapter 0023-1
rack 0020-1, 0049-1
smoke, troubleshooting 0009-17
steam, excessive 0009-16
tank assembly, repair 0017-1, 0048-1
tank PMCS procedures 0013-2
tank skid 0041-1
Teflon probe sensor 0037-1
terminal junction block 0035-1
theory of operation 0003-1
thermal resistor 0039-1
tilt switch 0038-1
toggle switch 0031-1
troubleshooting 0009-1
TRH inverter, equipment data 0002-2
troubleshooting
index 0008-1
maintainer procedures 0010-1
operator procedures 0009-1

U

unpacking 0014-1
utensil box
equipment data 0002-4
installation 0014-49

W

warranty 0001-2
water can installation 0014-9

These are the instructions for sending an electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: "Whomever" <whomever@avma27.army.mil>
To: TACOMLCMC.DAForm2028@us.army.mil

Subject: DA Form 2028

1. From: Joe Smith
2. Unit: home
3. Address: 4300 Park
4. City: Hometown
5. St: MO
6. Zip: 77777
7. Date Sent: 19-OCT-93
8. Pub no: 55-2840-229-23
9. Pub Title: TM
10. Publication Date: 04-JUL-85
11. Change Number: 7
12. Submitter Rank: MSG
13. Submitter FName: Joe
14. Submitter MName: T
15. Submitter LName: Smith
16. Submitter Phone: 123-123-1234
17. Problem: 1
18. Page: 2
19. Paragraph: 3
20. Line: 4
21. NSN: 5
22. Reference: 6
23. Figure: 7
24. Table: 8
25. Item: 9
26. Total: 123
27. Text:

This is the text for the problem below line 27.

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is OAASA	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE 29 March 2013

TO: *(Forward to proponent of publication or form) (Include ZIP Code)*	**FROM:** *(Activity and location) (Include ZIP Code)*
U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP / TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	PFC JANE DOE Co A 3RD Engineer Br. Ft Leonard Wood, MO 63108

PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 10-1670-296-20&P	30 October 2002	Unit Manual for Ancillary Equipment for Low Velocity Air Drop Systems

ITEM	PAGE NO.	PARA-GRAPH	LINE NO.*	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON (Provide exact wording of recommended changes, if possible).
	0036-2				1	In Table 1, Sewing Machine Code Symbols, the second sewing machine code symbol should be MDZZ not MD22 Change the manual to show Sewing Machine, Industrial: Zig-Zag; 308 stitch; medium-duty; NSN 3530-01-181-1421 as a MDZZ code symbol.

SAMPLE

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
Jane Doe, PFC	(508) 233-4141 DSN 256-4141	Jane Doe *Jane Doe*

TO: *(Forward direct to addressee listed in publication)*	FROM: *(Activity and location) (Include ZIP Code)*	DATE
U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP / TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	PFC JANE DOE Co A 3RD Engineer Br. Ft Leonard Wood, MO 63108	29 March 2013

PART II - REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE
TM 10-1670-296-20&P	30 October 2002	Unit Manual for Ancillary Equipment for Low Velocity Air Drop Systems

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION
0066-9					4			Callout 16 in figure 4 is pointed to a D-Ring. In the Repair Part List key for Figure 4, item 16 is called a Snap Hook. Please correct one or the other.

PART III - REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

SAMPLE

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is ODISC4.	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
TO: *(Forward to proponent of publication or form) (Include ZIP Code)* U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP / TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	**FROM:** *(Activity and location) (Include ZIP Code)*	

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 10-7360-230-13&P	20 December 2014	Operator and Maintenance Manual including Repair Parts and Special Tools List for Kitchen Module (Assault Kitchen)

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Provide exact wording of recommended changes, if possible).*

**Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

TO: *(Forward to proponent of publication or form) (Include ZIP Code)*	**FROM:** (*Activity and location) (Include ZIP Code)*	**DATE**
U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP / TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000		

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE
TM 10-7360-230-13&P	20 December 2014	Operator and Maintenance Manual including Repair Parts and Special Tools List for Kitchen Module (Assault Kitchen)

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is ODISC4.	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
TO: *(Forward to proponent of publication or form) (Include ZIP Code)* U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP / TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	**FROM:** *(Activity and location) (Include ZIP Code)*	

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

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ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Provide exact wording of recommended changes, if possible).*

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TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

By Order of the Secretary of the Army:

Official:

GERALD B. O'KEEFE
Administrative Assistant to the Secretary of the Army
1416906

RAYMOND T. ODIERNO
General, United States Army
Chief of Staff

Army Distribution:
Initially published in electronic media only. When funds become available, this publication will be distributed in accordance with the initial distribution number (IDN) 256988 requirements for TM 10-7360-230-13&P.

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 3 2.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Weights

1 centigram = 10 milligrams = .15 grain
1 decigrarn = 10 centigrams = 1.54 grains
1 gram = 10 decigrams = .035 ounce
1 dekagrarn = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .15 5 sq. inch
1 sq. decimeter =100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

PIN: 085410-000